OLYMPUS®

INSTRUCTIONS

GX-PHU

PHOTO UNIT

This instruction manual is for the Olympus GX-PHU Photo Unit. To ensure the safety, obtain optimum performance and familiarize yourself fully with the use of this equipment, we recommend you study this manual thoroughly before operating the system. Retain this instruction manual in an easily accessible place near the work desk for future reference.

AX6289

CONTENTS

Correct assembly and adjustments are indispensable to allow the photo unit to manifest its full performance. If you are going to assemble the photo unit by yourself, please see Chapter 9, "ASSEMBLY" (pages 33 to 36).

IMPORTANT - Be sure to read this first for safe use of the equipment. - 1,2

1 SYSTEM DIAGRAM 3

2 MODULE NOMENCLATURE 4-7

3 CHECK BEFORE PHOTOGRAPHING 8-10

1 Photographic Ranges 8
2 How To Focus 8
3 Metering Area 9
4 Film Plane Magnification 9
5 Photography Light Path Selection 9
6 Notes on Dark Specimens and Room Environment 10

4 PHOTOMICROGRAPHY USING 35 mm/LARGE FORMAT CAMERA BACK 11

5 FILM LOADING 12-18

5-1 Loading Film in the 35 mm Camera Back 12
5-2 Loading Film in Large Format Camera Backs 14

1 Polaroid Camera Back PM-CP-3 14
2 Intermediate Adapter for 4 x 5 Film Holders PM-C4X5-3 15
3 Universal Large Format Frame PM-CUP 16
4 Fuji Instant Camera Back PM-CFI-4 17

5-3 Operations After Exposure of Large Format Film 18

6 CONTROL BOX 19-26

6-1 Initial Programming of the Control Box 19

1 Setting the LCD Brightness (BRIGHT.) 19
2 Setting the Film Speed (ISO) 19
3 Setting the Film Reciprocity (RECIP.) 20

6-2 Features for Improving the Photographic Effects 21

1 Using Automatic Exposure (AUTO) 21
2 Using Manual Exposure (MANU) 22
3 Using Time Exposure (TIME) 22
4 Using the Automatic Exposure Locking (AEL) 23
5 Setting the Spot/Average Metering Area 24
6 Setting the Exposure Adjustment (EXP. ADJ.) 25
7 Setting the Multiple Exposure Photography (M. EXP.) 26
8 Resetting the Film Count (F. RESET) 26

7 TROUBLESHOOTING GUIDE 27-30

8 SPECIFICATIONS 31,32

9 ASSEMBLY 33-36

■ PROPER SELECTION OF THE POWER SUPPLY CORD 37-38

IMPORTANT

⚠ SAFETY PRECAUTIONS

1. Just as a microscope, the photo unit consists of precision instruments. Handle it with care and avoid subjecting it to sudden or severe impact.
2. Do not use the photo unit where it is subjected to direct sunlight, high temperature and humidity, dust or vibrations. (For the operating conditions, refer to chapter 8, "SPECIFICATIONS".)
3. Always use the AC power adapter and power cord provided by Olympus. Otherwise the intended electrical safety performance cannot be obtained.
4. Before plugging or unplugging cords and cables, make sure that the main switch is set to "**O**" (OFF).
5. Be sure to **ground** the system to avoid potential shock hazard. This is particularly important when using the system in electrically noisy environments or in the vicinity of other equipment that is particularly sensitive to electrical noise.
6. The cords and cables are easily damaged by excessive bending or twisting. Avoid subjecting them to unnecessary strain.
7. An error in operating procedure is usually the cause when the alarm buzzer sounds or the control keys do not accept input. If this occurs, verify correct operating procedures and then try again. Make sure to perform correct operation before retrying it.
8. When you are going to remove the photo unit from the microscope or a module such as an observation tube from the photo unit, remove the camera and film back first to prevent leakage of light.

Safety Symbols

The following symbols are found on the equipment. Study the meaning of the symbols and always use the equipment in the safest possible manner.

Symbol	Explanation
⚠	Carefully read the instruction manual before use.
⎓	Use a DC power supply (15 V, 1.0 A).
→⊕	Indicates an input jack.

1 Maintenance and Storage

1. Clean all glass components by wiping gently with gauze. To remove fingerprints or oil smudges, wipe with gauze slightly moistened with a mixture of ether (70%) and alcohol (30%).

⚠ **Since solvents such as ether and alcohol are highly flammable, they must be handled carefully. Be sure to keep these chemicals away from open flames or potential source of electrical sparks — for example electrical equipment that is being switched on or off. Also remember to always use these chemicals only in a well-ventilated room.**

2. If any part of the equipment (other than glass components) gets dirty, wipe it with a clean cloth without using organic solvents. Particularly, a plastic part should be cleaned with a cloth lightly moistened with a diluted neutral detergent.
3. Do not disassemble any part of the equipment. This could result in malfunctions or reduced performance.
4. When not using the system, keep it covered with the dust cover provided.

2 Caution

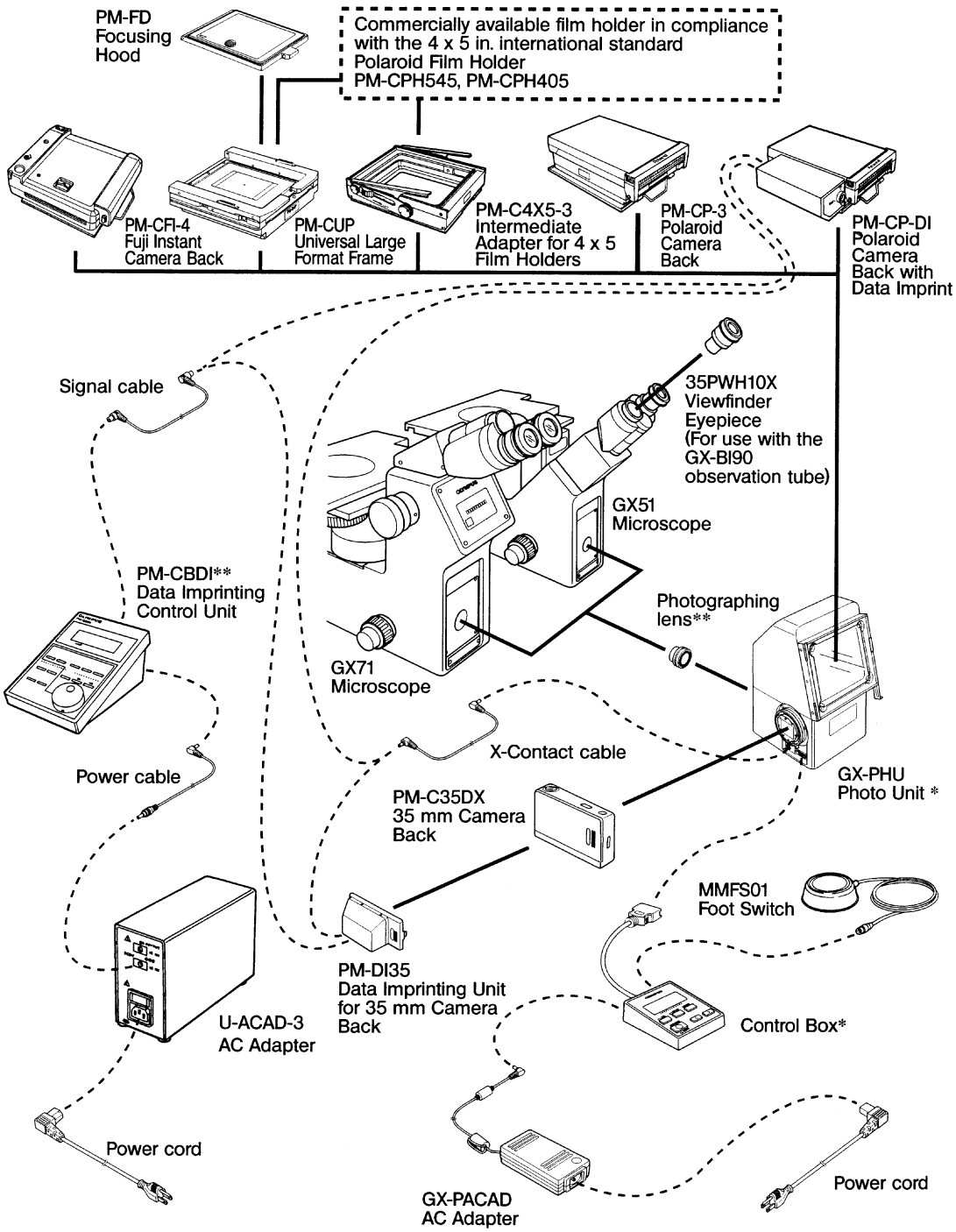
If the equipment is used in a manner not specified by this manual, the safety of the user may be imperiled. In addition, the equipment may also be damaged. Always operate the option as outlined in this instruction manual.

The warning, caution and other notes in this manual use the following symbols.

- ⚠ : Warning for preventing injury of the user or damage to the product (including the furniture in the surroundings).
- ★ : Caution for preventing damage to the product.
- ◎ : Reference note or remark (information which is convenient for the operation and/or maintenance)

1 SYSTEM DIAGRAMM

© Only the modules marked * are included in the GX-PHU photo unit.



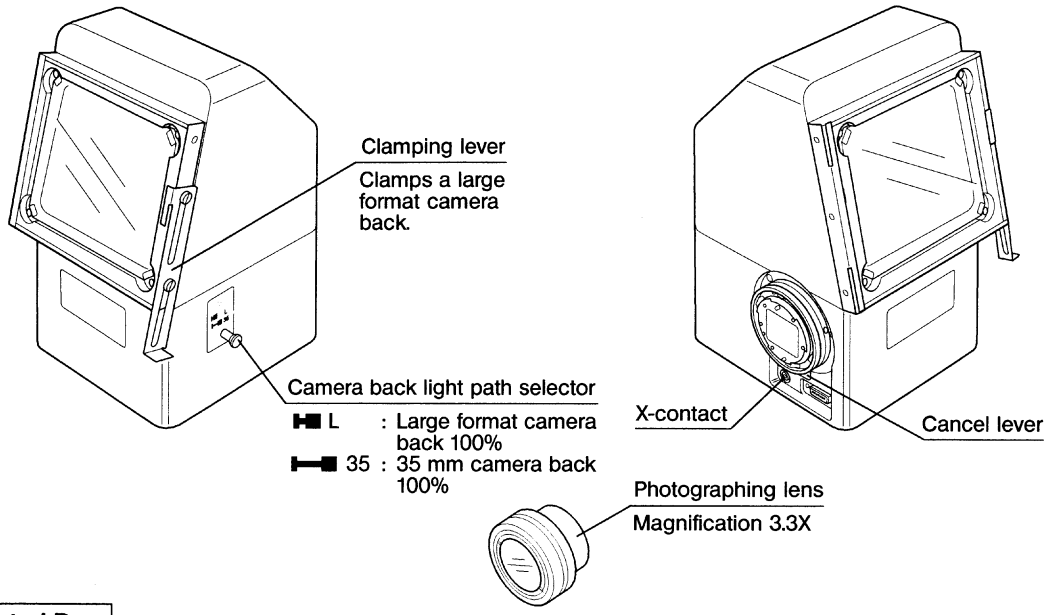
** These modules should be turned on in the specified order (see page 36).

2 MODULE NOMENCLATURE

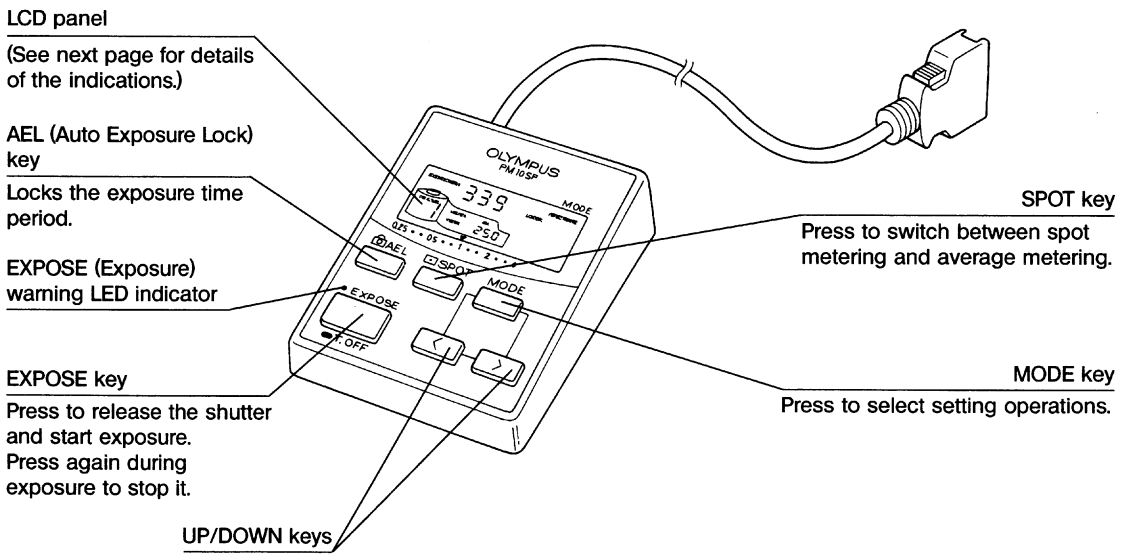
◎ If you have not assembled the photo unit yet, see Chapter 9, "ASSEMBLY" (pages 33 to 36).

Photo Unit GX-PHU/Photographing Lens

CAUTION The confocality between the GX-PHU and photographing lens have been adjusted for the specific combination that is provided in the same system. Do not attempt to use them in a different combination.

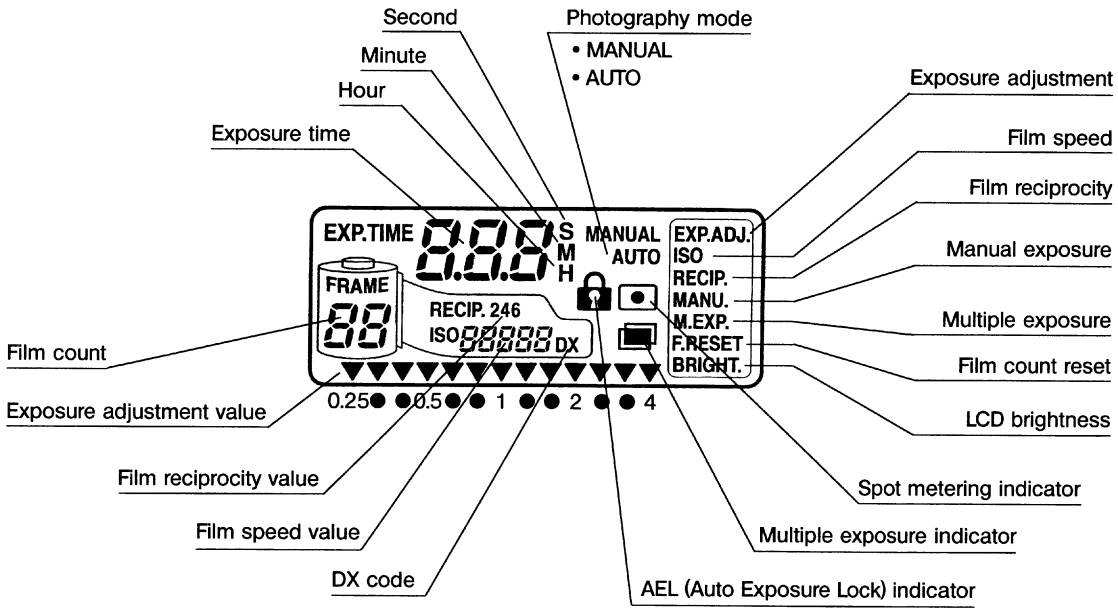


Control Box

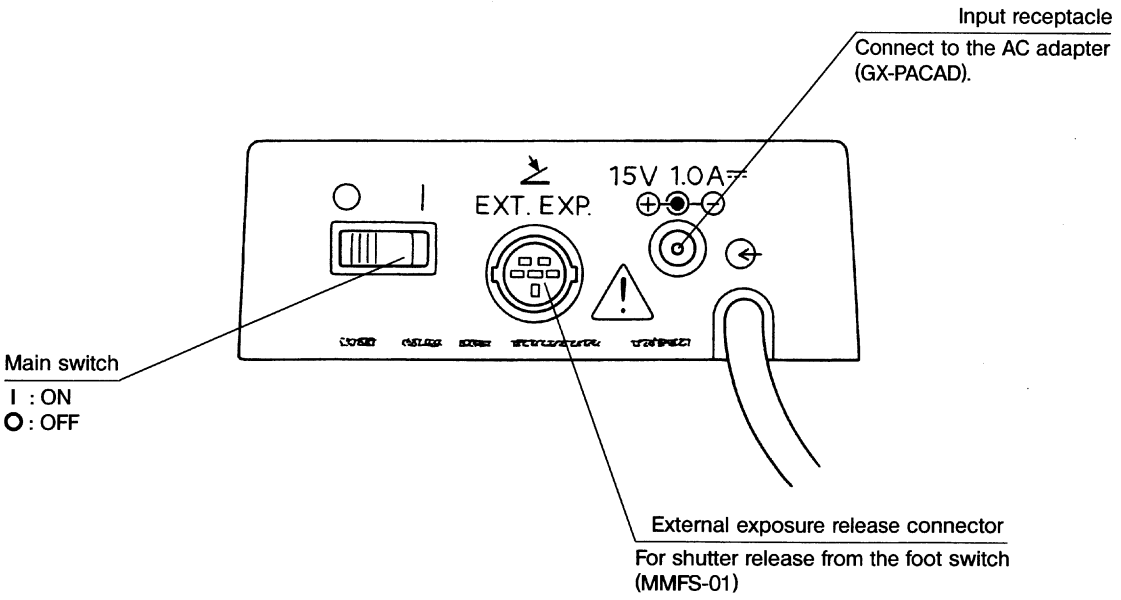


LCD Panel

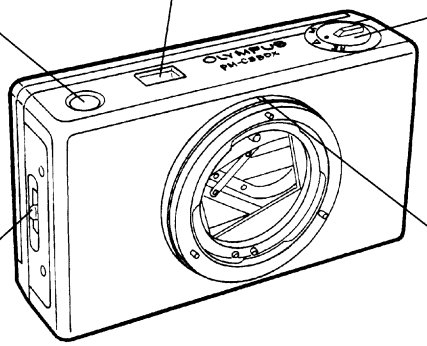
★ The illustration shows the status in which all display segments are lit. In actual operation, however, only the applicable information is displayed.



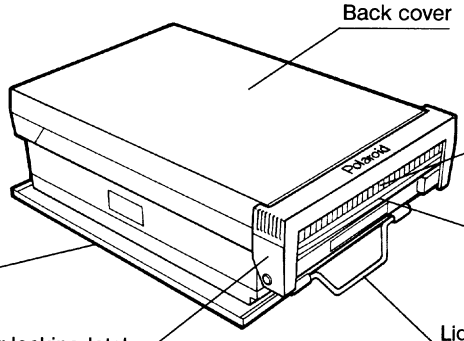
Control Box Rear Panel



Automatic 35 mm Camera Back PM-C35DX

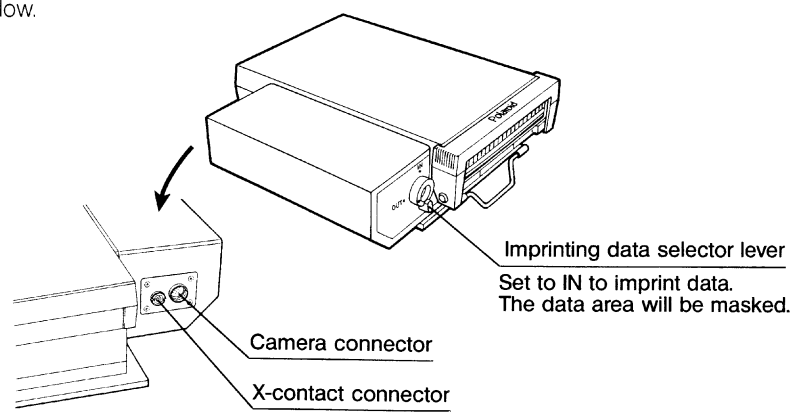

Manual winding button
Not used with the GX-PHU.
(For use with the PM-10M)
Film counter
Film advance mode selector lever
A: Auto winding
M: Manual winding (for the PM-10M)
RE: Rewinding before the end of film
Back cover open/close lever
Positioning index

Polaroid Camera Back PM-CP-3

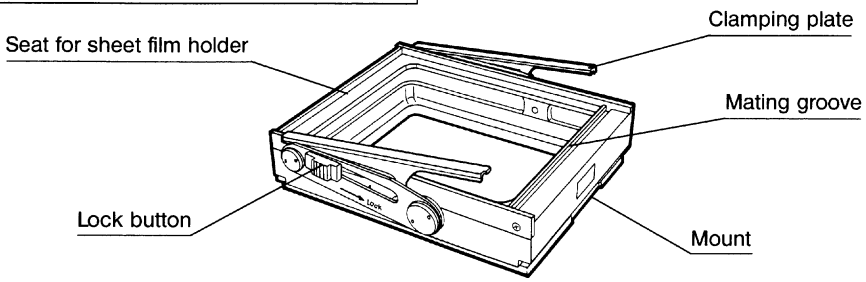


Polaroid Camera Back with Data Imprint PM-CPDI

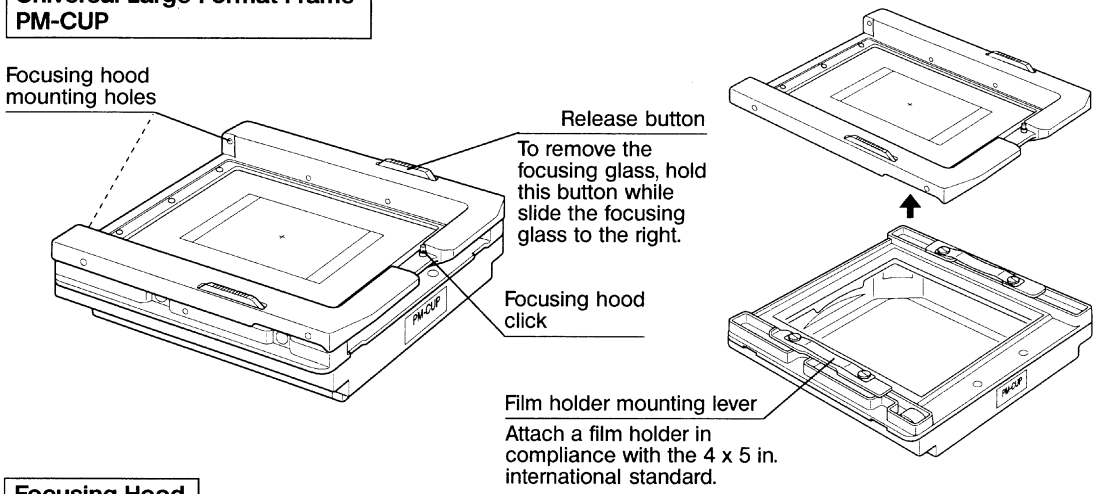
© This product is based on the same specifications as the PM-CP-3 Polaroid camera back except for the parts described below.


Imprinting data selector lever
Set to IN to imprint data.
The data area will be masked.
Camera connector
X-contact connector

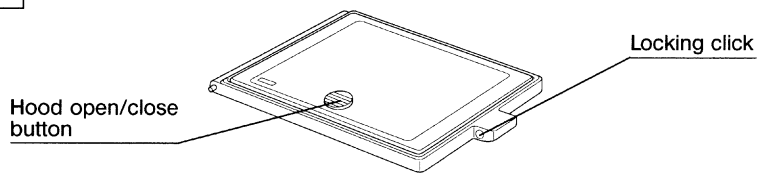
Intermediate Adapter for 4 x 5 Film Holders PM-C4X5-3



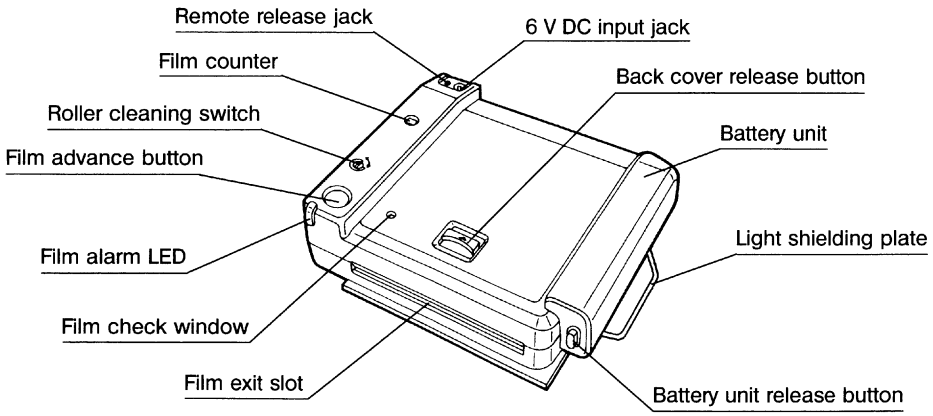
Universal Large Format Frame PM-CUP


Focusing hood mounting holes
Release button
To remove the focusing glass, hold this button while slide the focusing glass to the right.
Focusing hood click
Film holder mounting lever
Attach a film holder in compliance with the 4 x 5 in. international standard.

Focusing Hood PM-FD



Fuji Instant Camera Back PM-CFI-4



3 CHECK BEFORE PHOTOGRAPHING

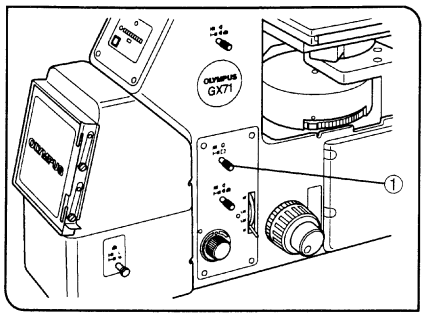
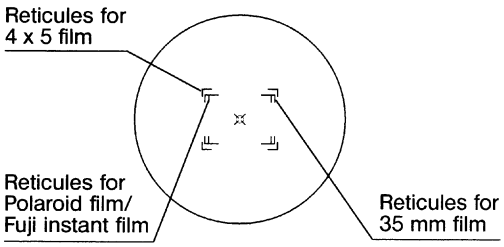


Fig. 1

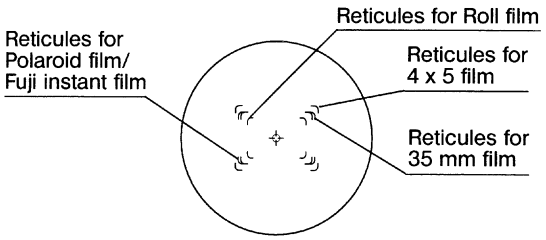
1 Photographic Ranges (Fig. 1)

1. When the GX71 microscope is used, pull the photo frame insertion knob ① outward to engage it in the light path. Now the photo frame should be visible through the eyepiece.
2. When the GX51 microscope is used, use the photo frame provided inside the 35PWH10X viewfinder eyepiece.

◎When the 35WH10X or PWH10X is used with the GX51, the photographic range becomes the 3.3 photo frame.



GX71
(Photo frame in the microscope frame)



GX51 (35PWH10X)

(Note) The sizes of the above photographic ranges are approximate 90% of the sizes seen in the actual view.

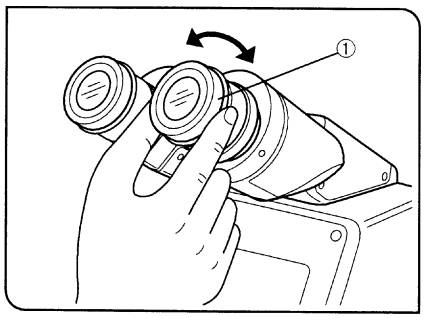
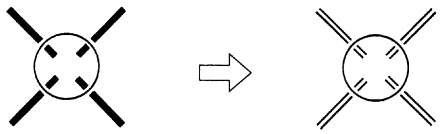


Fig. 2

2 How To Focus (Fig. 2)

1. Turn the diopter adjustment ring ① of an eyepiece until the double cross lines at the center of photo frame can be clearly distinguished as separate lines.



Out of focus In focus

2. Since the cross lines and film plane are optically in precise alignment, adjust the focus until both double cross lines and the specimen are in focus.

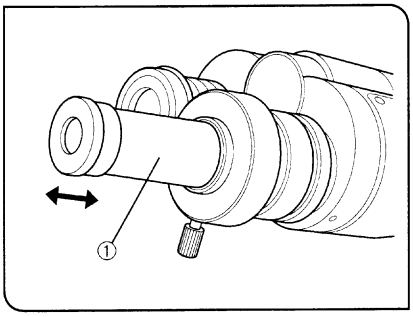


Fig. 3

Focusing with a Low-Power Objective

◎Accurate focusing is difficult when using a low-magnification objective due to the large depth of focus.
In such a case, mount the U-FT focusing telescope ① on the eyepiece in order to magnify the image further and focus on the specimen more precisely.

Focusing Using the PM-CUP Universal Large Format Frame

For the focusing method, see page 16.

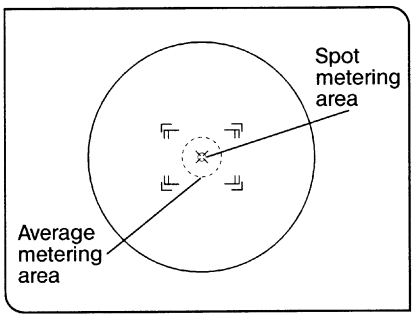


Fig. 4

3 Metering Area (Fig. 4)

◎The 1% spot metering area and 30% average metering area can approximately be predicted through the photo frame. However, with the GX51, the spot metering position cannot be predicted correctly. Do not apply this method with the GX51.

◎The dotted circle shown as the average metering area in Fig. 4 is not shown on the actual photo frame.

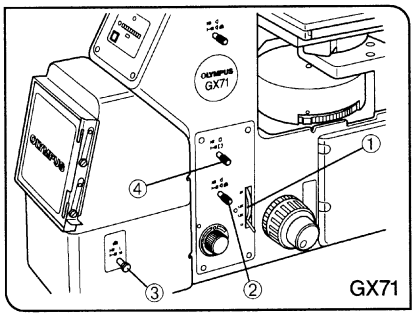


Fig. 5

4 Film Plane Magnification (Fig. 5)

◎ With the GX71, the film plane magnification can be varied with the zooming knob ①. It is fixed at 1X with the GX51.

35 mm Camera Back

Objective power x 3.3 x Zooming ratio (1X to 2X)

Large Format Camera Back

Objective power x 10 x Zooming ratio (1X to 2X)

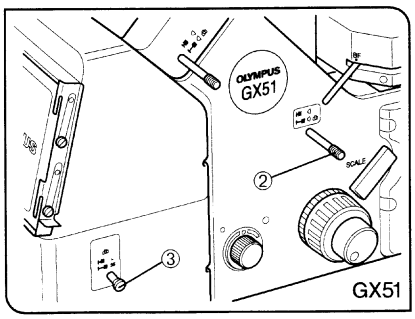
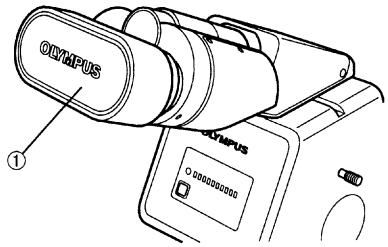


Fig. 6

5 Photography Light Path Selection (Figs. 5 & 6)

1. Pull out the observation/PHOTO-TV selector knob ②.
2. Set the camera back light path selector knob ③ to the camera back in use. (Push in: Large format camera back. Pull out: 35 mm camera back.)
3. When the GX71 is used, pull out the photo frame insertion knob ④ to engage the photo frame in the light path.



6 Notes on Dark Specimens and Room Environment

★During photomicrography of dark specimens* of fluorescence or darkfield observation, stray light from nearby fluorescent lamps, etc. may enter the microscope or photo unit and cause error in photometry or exposure. Similar troubles are also experienced in photomicrography in an extremely bright room*. In case of such an error or trouble, take treatments as described below.

- Conduct photomicrography in a dark room such as an anechoic chamber.
- After framing, attach the stray light shielding cover ①, provided with the microscope, to the eyepiece before proceeding to the metering and exposure.

* To check the metering and exposure errors, remove the stray light shielding cover and compare the expected exposure time values before and after the covering. If the value is altered by the covering, the above treatments are required.

4 PHOTOMICROGRAPHY USING 35 MM/LARGE FORMAT CAMERA BACK

- Complete the optical adjustments of the microscope before proceeding.
- Engage the LBD color temperature conversion filter in the light path, and, with the GX71, set the voltage selector to the 📷 marking position. With the GX51, set the light intensity control to a brightness scale between 4 and 5. (With monochrome photomicrography, precise color temperature setting is basically unnecessary. However, better results can be obtained by performing this setting operation.)
- For photomicrography of a dark specimen or in a very bright room, see item 6 on page 10.
- When the 35 mm camera back or large format camera back is not used, attach the 35 mm camera back or dustproof cap to the 35 mm camera back mount or the dustproof cover to the large format camera back mount.
- When the PM-DI35 data imprinting unit is used, be sure to observe the note for setting the main switch to " I " (ON) (see page 36).

Set the main switch of the control box to " I " (ON).

- Provided that the 35 mm camera back is not attached, the control box is automatically set for the large format.

↓

Select the camera light path with the light path selector knob on the microscope frame.

↓

Set the camera back light path selector knob to the camera back to be used (35 mm or large format).

↓

Set the exposure mode.

- Set to AUTO, MANUAL or TIME.

↓

Set the metering area.

- Set to Spot or Average metering. (Select Average metering when using the GX51.)

↓

Perform framing and the specimen focusing operations.

- When a low-magnification objective is used, it is recommended to bring the specimen in focus using the eyepiece and use additionally the U-FT focusing telescope.
- If the specimen image is deviated from the metering area (center), move it to the center and perform the AE Lock operation before framing.

↓

Perform the exposure adjustment or multiple exposure setting.

- Set the exposure adjustment according to the distribution of specimen in the metering area.
- Reduce the time per exposure for multiple exposure photography.

↓

Check if exposure is ready.

- Exposure is possible if the LED indicator above the EXPOSE key is lit in green.

↓

Pull out the light shielding plate.*

↓

Press the EXPOSE key to start exposure.

- With a 35 mm camera back, the film will be wound automatically by 1 frame after completion of exposure. (The film will not be wound in case of multiple exposure photography.)

↓

Set the light shielding plate back in the original position.*

↓

Proceed to the "Operations After Exposure of Large Format Film".

(Large format camera back only)

* Perform this step only when using a large format camera back equipped with a light shielding plate.

Notes for photomicrography of specimens under fluorescence

1. Be sure to set the film reciprocity (RECIP.).
2. Set the film speed (ISO) to about 4 times the ISO rating of the film in use.

5 FILM LOADING

5-1 Loading Film in the 35 mm Camera Back

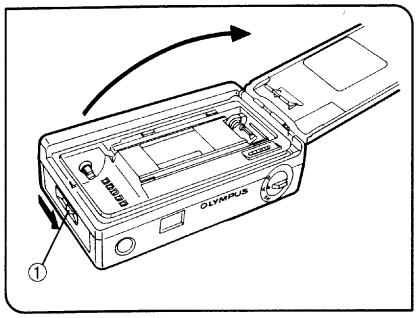


Fig. 7

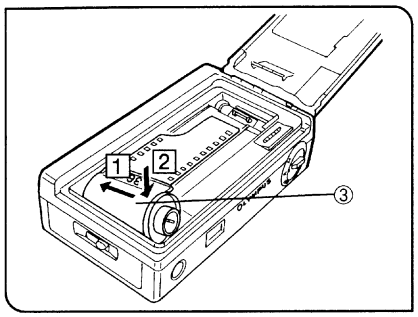


Fig. 8

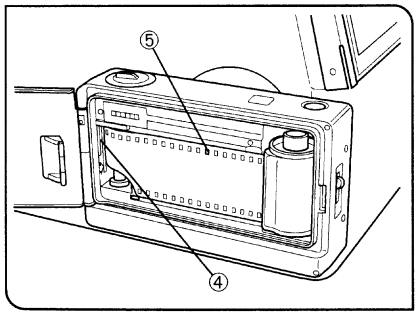
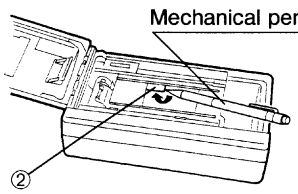


Fig. 9

1. Press the back cover release lever ① on the camera back in the direction of the arrow and open the back cover. (Fig. 7)

◎Setting the light shielding plate
When the PM-DI35 data imprint unit is used and if you want to shield the area where the data is to be imprinted, set the light shielding plate ② before loading the film.



★The light shielding plate can be set or removed only before the film is loaded. Using a pointed object such as the tip of a mechanical pencil, flip up the light shielding plate and let the magnet hold it in position.

2. Correctly insert the film cartridge ③ in the film chamber. (Fig. 8)

3. Adjust the length of the leading section of the film so that its end is aligned with the red film-loading index ④. (The film may not wind properly if the end is not properly aligned with the index.)

★If the camera back has been removed from the GX-PHU photo unit to load the film, attach the camera back now to allow the film to be advanced.

★When loading the film, make sure that the film is seated flush with the film guide rails inside the camera back and that the film perforations are aligned with the sprocket teeth ⑤. (Fig. 9)

4. Close the back cover.
When the camera back light path selector knob is set for the 35 mm camera back, the film automatically advances.

★The control box must be turned on in order for the film to advance.
If the film does not advance properly, the film counter does not show "1" but "E" and the film count display on the control box shows blinking "0".
In this case, reload the film correctly.

◎You can check the type of film loaded by looking through the window on the back cover.

Rewinding the Film

1. Automatic rewinding
   When the end of the film is reached, the film is rewound automatically.

◎After rewinding, the end of the film leading section remains outside the cartridge. To ensure that you do not accidentally mistake an exposed roll for a new one, it is recommended that you fold the film end after removing the cartridge from the camera back.

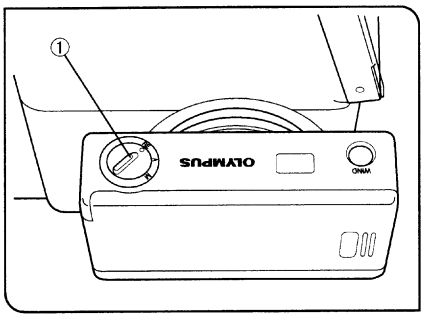


Fig. 10

2. Rewinding before the end of the film is reached (Fig. 10)
   If you want to rewind the film early, turn the film advance mode selector lever ① on top of the camera back to "RE".

★When rewinding starts, the film advance mode selector will turn back automatically to "A"; leave it in this position.

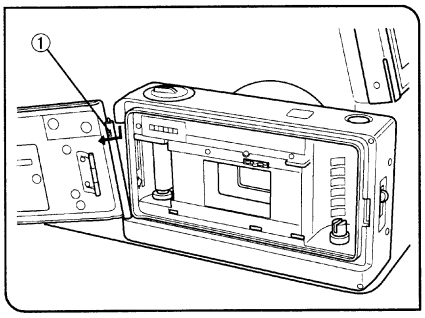


Fig. 11

Attaching the PM-DI35 Data Imprinting Unit for 35 mm Camera Back (Fig. 11)

★To attach the PM-DI35, remove the camera back from the GX-PHU or set the main switch of the control box to " O " (OFF) before proceeding.

1. Open the back cover, then press downward on the back cover hinge pin ① to remove the cover.
2. Replace the back cover with the PM-DI35 data imprinting unit.

◎Be sure to refer to the instruction manual for the control box for data imprinting unit (PM-CBDI) before actually taking photographs.

5-2 Loading Film in Large Format Camera Backs

1 Polaroid Camera Back (PM-CP-3) (Figs. 12-14)

- Picture size: 3-1/4 x 4-1/4 inches (73 x 95 mm)
- Film used: 8.3 x 10.8 cm pack (Standard series)

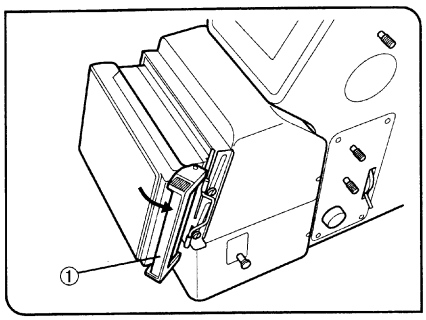


Fig. 12

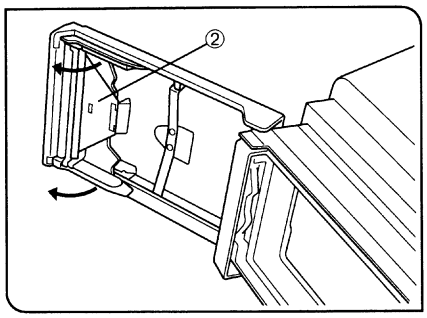


Fig. 13

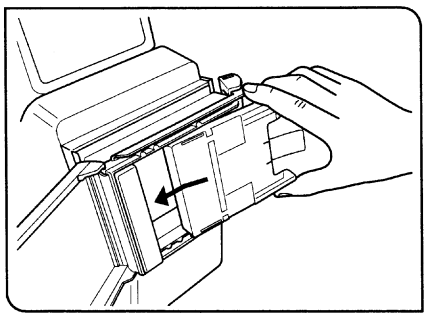


Fig. 14

★Read the instructions provided with the Polaroid film pack carefully before proceeding to the following steps.

1. Open the film pack case and take out the film pack.
2. Push the cover locking latch ① downward with both hands to flap it down in the direction of the arrow. (Fig. 12)
3. Open the camera back cover all the way.

★The back cover can be damaged if it is thrown open carelessly. Support the cover with one hand when opening it.

◎Cleaning the rollers
It is essential to keep the rollers clean, for dirty rollers will produce irregularities on the picture.

1. To clean the rollers, lift the roller assembly ② upward in the direction of the arrow and remove. (Fig. 13)
2. Wipe the rollers first with a wet cloth and then with a dry cloth.

★Do not scratch the rollers with a metallic object or fingernail. After cleaning, push in the roller assembly ② in the original position.

4. Next, holding the film pack by the edges so that the safety cover side bearing the legend "SAFETY COVER... THIS SIDE FACES LENS" faces the camera's light shielding plate, insert the film pack against the plate spring beneath the back cover. (Fig. 14)
5. Push the film pack into the camera back until the film pack snaps into place.

★Make sure that the white tabs are not caught between the film pack and the camera back.

6. Close the camera back cover and snap the cover locking latch securely.

★The black tab of the safety cover should protrude from the small slot.
If this is not the case, open the back cover once again and make sure that the black tab is sticking out.

7. Hold the black tab of the safety cover and pull it straight out of the camera back.

★After the black tab is pulled out, a white tab should emerge from the small tab slot.
Do not pull out the white tab because it is to be pulled out only after having made an exposure. Now the camera back is ready for exposure.

2 Intermediate Adapter for 4 x 5 Film Holders (PM-C4X5-3) (Figs. 15-17)

● This adapter enables photomicrography using a film holder in compliance with the 4 x 5 in. international standard or a Polaroid film holder (PM-CPH405 or PM-CPH545).
Picture size: 4 x 5 inches
PM-CPH405: 7.3 x 9.5 cm.
PM-CPH545: 8.9 x 11.4 cm.

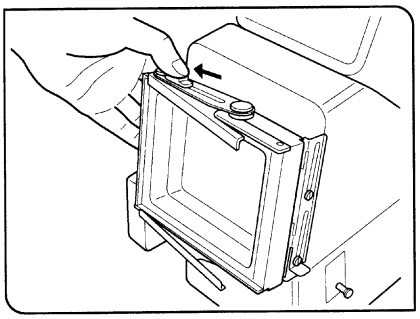


Fig. 15

1. Slide the lock buttons (on both sides) of the intermediate adapter in the direction opposite to locking.
   At the end of their travel, press the buttons and the clamping device will lift up, widening the film holder insertion opening. (Fig. 15)
   This operation may not be required or vary depending on the type of the film holder in use. (Fig. 16)
2. Insert the film holder all the way until it stops.
   This will engage a protrusion on the film holder with a mating groove on the intermediate adapter.
3. Slide the lock buttons back to clamp the film holder down.

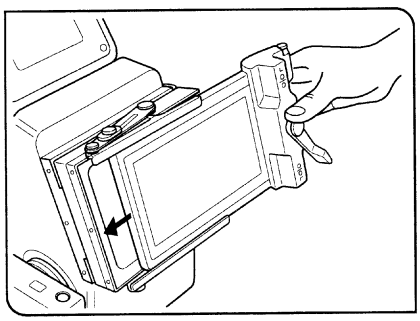


Fig. 16

Detaching the Film Holder

1. Slide the lock buttons on both sides in the direction opposite to locking.
2. Hold the film holder by the right edge and pull it out while lifting it slightly. (Fig. 17)

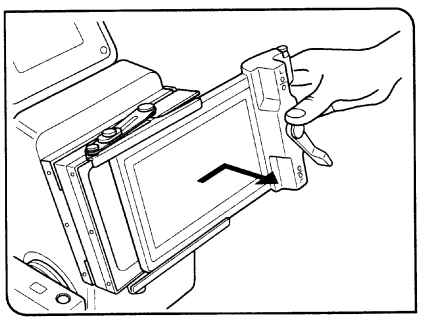


Fig. 17

3 Universal Large Format Frame PM-CUP (Fig. 18)

● The large format frame enables photomicrography using a film holder in compliance with the 4 x 5 in. international standard or a Polaroid film holder (PM-CPH405 or PM-CPH545).
Picture size: 4 x 5 inches
PM-CPH405: 7.3 x 9.5 cm.
PM-CPH545: 8.9 x 11.4 cm.)

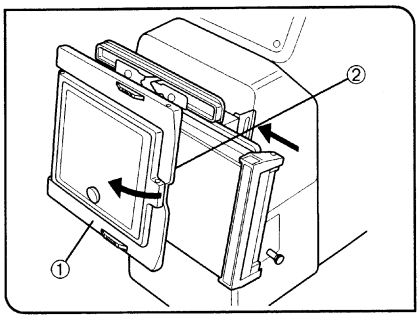


Fig. 18

Lift the focusing glass ① of the large format frame and insert the film holder all the way into the film holder insertion slot ②.

Detaching the Film Holder

Lift the focusing glass slightly while pull out the film holder.

★ **To prevent trouble, do not lift the focusing glass too much or apply excessive force to it.**

Focusing with the Focusing Glass

1. Detach the film holder from the universal large format frame.
2. Push in the camera back light path selector knob to select the large format camera back 100% light path.
3. Select the TIME exposure mode on the control box (page 22).
4. Press the EXPOSE key to release the shutter. Now the photographed image can be viewed on the focusing glass.
5. Adjust focusing so that the image looks sharp. Use a magnifying glass for precise focusing.

◎ Before starting actual exposure, press the EXPOSE key to quit the TIME exposure setting.
When a large format camera back is used, attach the film holder. When a 35 mm camera back is used, pull out the camera back light path selector knob.
Set the required exposure mode before starting exposure.

4 Fuji Instant Camera Back (PM-CFI-4) (Figs. 19-21)

- Film used: Fuji Instant Color Film ACE (ISO800)
- ★ **Previous films such as the FI-800 cannot be used.**
- Picture size: 69 x 91 mm
- Batteries: "AM3"-size alkaline batteries (LR6)

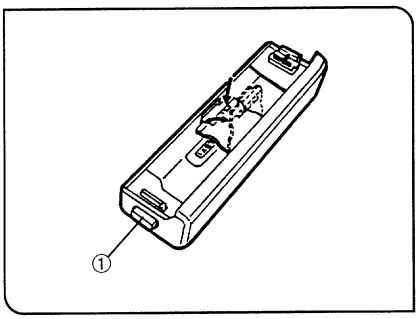


Fig. 19

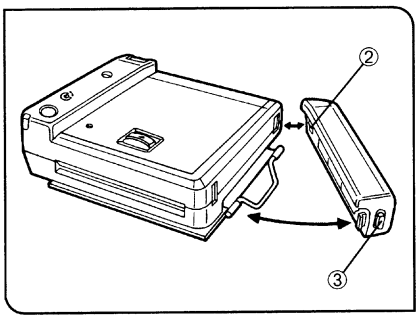


Fig. 20

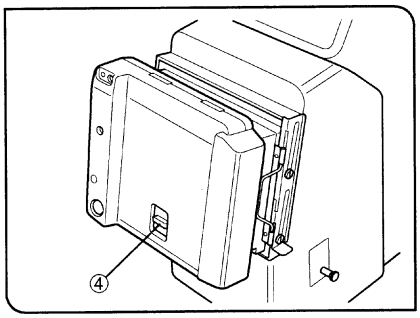


Fig. 21

Loading Batteries (Figs. 19 & 20)

1. Press the battery unit release button ① and remove the battery unit.
2. Open the battery holder plate as shown in Fig. 19. (When replacing batteries, removal is easier if you use a pointed object such as the tip of a mechanical pencil as a lever.)
3. Insert four "AM3"-size alkaline batteries (LR6) into the battery unit as shown by the illustration inside it.
4. Close the battery holder plate.
5. Attach the battery unit to the camera back. First insert the tab ② on the side with the contact into its slot, then push the side with the release button ③ into place. (Functions such as film ejection will not work if the contact side of the battery unit is not properly seated.)

◎ Manganese or Ni-Cd batteries can also be used in place of alkaline batteries.

Loading Film (Fig. 21)

1. Open the film pack case and take out the film pack.
2. Press the back cover release button ④ toward OPEN and open the camera back cover.
3. Align the line on the film pack with the line on the camera back and insert the film pack.
4. Press the film advance button. This ejects the film pack's light shielding plate automatically and makes the camera back ready for exposure.

Film Alarm LED

- The LED indicator blinks for 15 seconds when the film counter indicates " ⊡ " or "E".

Roller Cleaning Switch

- Fluid leaking from the film may settle on and contaminate the roller surfaces. In this case, open the camera back cover and invert the film pack. Set the roller cleaning mode to "R (Reverse)" and then wipe with a cotton swab or gauze moistened with water by rotating the rollers in the opposite direction to normal operation. Do not set the switch to "R" except for cleaning. After cleaning, make sure to set it back to "F (Forward)".
  Also clean the rollers if regular patterns with an interval of about 3 mm appear on photographs.

Remote Release Operation

- If you want to use a remote release, use one equipped with a 2.5 mm diameter plug.
- Connect the plug of the remote release to the remote release jack.

5-3 Operations After Exposure of Large Format Film

1 Polaroid Camera Back (PM-CP-3)

After exposure, develop the film in the following manner.

1. Grasp the white tab emerging from the camera back with the thumb and index finger of your hand and pull it out completely in one motion.
2. After the white tab is pulled out, a yellow tab emerges.

★ **If the yellow tab is already visible, do not pull the white tab.**

Pulling out the white tab does not commence development; it is a preparatory step for pulling the yellow tab.

3. Hold the center of the yellow tab and pull it out from the camera back quickly in one motion. This begins development from the point when the yellow tab is pulled out all the way. For the development time, follow the instructions provided with the film.

2 Intermediate Adapter for 4 x 5 Film Holders (PM-C4X5-3)

For the operations after exposure, refer to the instructions provided with the sheet film holder in use.

3 Fuji Instant Camera Back (PM-CFI-4)

1. Press the film advance button on the camera back to eject the exposed film.
2. The image usually starts to appear in about 15 seconds, and stabilizes in about 1 minute.
3. After taking all exposures (10 photographs), replace the film pack.

★ **Note that the structure of the film holder causes the film counter to be upside down.**

★ **Handle ejected films by the edges; do not touch the face of the film.**

NOTE

With this film, magenta tones tend to be enhanced when the exposure time is longer than 0.1 second. In this case, we recommend the use of a commercially-available color correction filter(s) such as the CC-10G or CC-30G.

6 CONTROL BOX

6-1 Initial Programming of the Control Box

◎The factory setup consists of: Film speed (ISO): 35 mm camera → DX/Large format camera → ISO 3200.
Exposure adjustment (EXP. ADJ.): 1
Film reciprocity (RECIP.): 4
Metering area: Average metering
Film count reset (F. RESET): 35 mm camera → Empty/Large format camera → 1.
LCD brightness (BRIGHT): 6

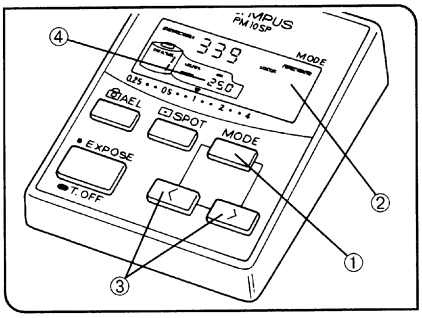


Fig. 22

1 Setting the LCD Brightness (BRIGHT.) (Fig. 22)

◎The brightness of the LCD panel can be set in 8 steps. Select the brightness level that can facilitate the reading.

1. Press the [MODE] key ① repeatedly until the MODE display ② shows [BRIGHT.].
2. Press the [‹] or [›] UP/DOWN key ③ repeatedly until the desired brightness is obtained.
3. Press the [MODE] key ① to return to the previous status.

◎To enable exposure adjustment by the automatic exposure, it is recommended to set so that the MODE display shows [EXP. ADJ.].

2 Setting the Film Speed (ISO) (Fig. 22)

◎When a 35 mm camera back is used together with a DX coded film, the ISO value is set automatically so this operation is not necessary.

NOTE **In photomicrography of a specimen under fluorescence, it is recommended to set the ISO value to about 4 times the rated film speed for the film in use. (Example: Set to ISO 400 with a ISO 100 film.)**
Note that this system has been optimized for brightfield specimens. To allow optimum photomicrography of specimens and prevent fading of their colors under fluorescence, we recommend to set a different ISO value than rated on the film in case of specimens under fluorescence.

1. Press the [MODE] key ① repeatedly until the MODE display ② shows [ISO].
2. Press the [‹] or [›] UP/DOWN key ③ repeatedly until the desired ISO value appears in display area ④.
3. Press the [MODE] key ① to return to the previous status.

◎To enable exposure adjustment of the automatic exposure, it is recommended to set so that the MODE display shows [EXP. ADJ.].

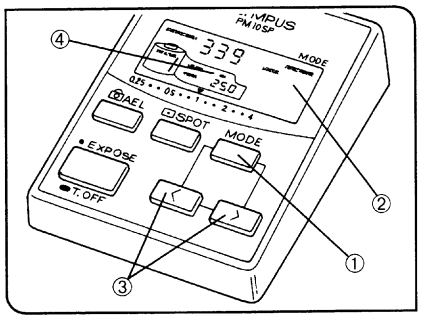


Fig. 23

3 Setting the Film Reciprocity (RECIP.) (Fig. 23)

◎In general, when a film is exposed for more than 1/2 second, the film sensitivity tends to drop and the actual required exposure time may become longer than the time calculated based on the film speed (ISO value). This characteristic is referred to as the reciprocity law failure.
As this characteristic differs depending on the film brands, it is required to compensate for the difference in reciprocity using this feature.

◎Factory setup "4" can be used without problem with most of normal brightfield photomicrography.

1. Press the [MODE] key ① repeatedly until the MODE display ② shows [RECIP.].
2. Press the [‹] or [›] UP/DOWN key ③ repeatedly until the rated film reciprocity for the film in use appears in display area ④.

★For the film reciprocity ratings, see the list on the attached sheet.
The setting values that are available with this feature are 2, 4 and 6 only. If other value is rated for the film in use, set a RECIP. value as shown below.
(Ratings 1 and 3 → 2, 5 → 4, 7 → 6.)

★If the film in use is not listed, set the standard value of "4".

★In special cases, you can also set other value than recommended according to your need.

3. Press the [MODE] key ① to return to the previous status.

◎To enable exposure adjustment of the automatic exposure, it is recommended to set so that the MODE display shows [EXP. ADJ.].

6-2 Features for Improving the Photographic Effects

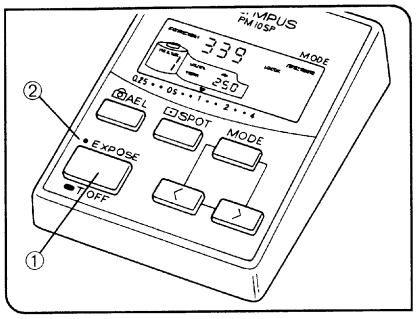


Fig. 24

1 Using Automatic Exposure (AUTO) (Fig. 24)

- The control box is set automatically to the auto exposure mode unless it has been set specifically to the manual exposure mode.
- Auto exposure is executed at the moment the **EXPOSE** key ① is pressed after the required setup.

Automatic Exposure Time Range

- This is between 1/125 second and 21 minutes 12 seconds under the conditions of a 35 mm camera back, ISO of 100, exposure adjustment of 1 and reciprocity of 4.

Light Distribution **The light distribution ratios below are those introduced in the GX-PHU.**

Operation	Camera	Metering
Metering	0%	100%
Exposure	100%	0%

Exposure Alarm LED ②

- Optimum exposure: Steady lighting of green LED. The green LED blinks during exposure.
- Overexposure: Blinking of red LED. "000S" displayed in the EXP. TIME area of the LCD panel. Intermittent buzzer beeps for 5 times. Exposure not accepted.

  Treatment
  - Reduce illumination using an ND filter.
  - With a black and white film, reduce the voltage.
- Underexposure: Continuous lighting of red LED. "999H" displayed in the EXP. TIME area of the LCD panel. Continuous buzzer beep for 5 seconds. Exposure not accepted.

  Treatment
  - Increase illumination.
  - Use the manual or time exposure mode.

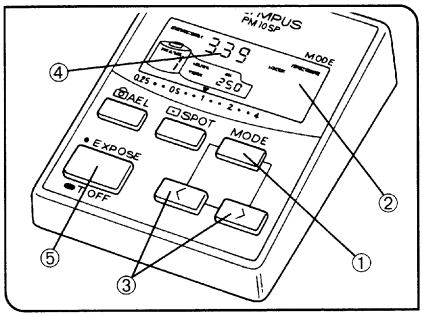


Fig. 25

2 Using Manual Exposure (MANU) (Fig. 25)

1. Press the [MODE] key ① repeatedly until the MODE display ② shows [MANU.].
2. Press the [‹] or [›] UP/DOWN key ③ repeatedly until the desired exposure time appears in the EXP. TIME display area ④. (Setting range: 0.1 second to 40 minutes)

★ Since manual exposure is possible only when the MODE display ② shows [MANU.], the MODE key should not be pressed like other mode setting features.

3. Press the [EXPOSE] key ⑤ to start exposure for the selected exposure time.

3 Using Time Exposure (TIME) (Fig. 25)

1. Press the [MODE] key ① repeatedly until the MODE display ② shows [TIME].
2. Press the [‹] UP/DOWN key ③ repeatedly until "0.00S" appears in the EXP. TIME display area ④.

★ Similarly to the manual exposure setting, the MODE key should no longer be pressed.

3. Press the [EXPOSE] key ⑤ to start exposure. The exposure time display ④ increments as the exposure continues. (Max. exposure time 999 hours)
   The exposure alarm LED blinks in green during the time exposure.
4. When the desired exposure time has been reached, press the [EXPOSE] key (which functions as the timer exposure off switch now) and hold it for more than 0.7 second to complete the time exposure.

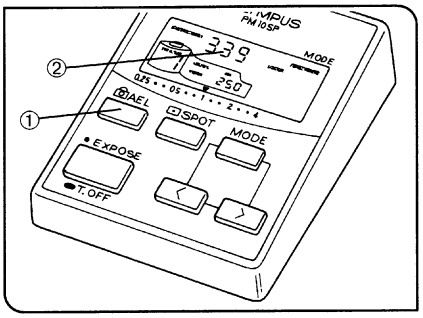


Fig. 26

4 Using the Automatic Exposure Locking (AEL) (Figs. 26 & 27)

NOTE **The AEL operation is not accepted in the manual exposure mode.**

◎Use the AEL key to take photomicrographs with a constant exposure time. This enables memory-based semi-automatic photomicrography.

Locking the Estimated Exposure Time

- When the AEL key ① is pressed in other condition than in the middle of automatic exposure, the currently displayed exposure time ② is locked and the AEL marking "🔒" appears in the LCD panel.

Locking the Actual Exposure Time

- The actual exposure time used in photomicrography is displayed for 2 seconds after completion of exposure. You can lock in the actual exposure time by pressing the AEL key ① before the display disappears. The AEL making "🔒" appears in the LCD panel in this case also.

★**You cannot lock the actual exposure time unless you press the AEL key within 2 seconds after the completion of previous exposure. If you want to perform more than one exposure using the same exposure time period, it is recommended to lock the AE time before starting the first actual exposure (i.e. while the estimated exposure time is displayed).**

Releasing the AE Locking

- Press the AEL key ① again to release the AE locking.

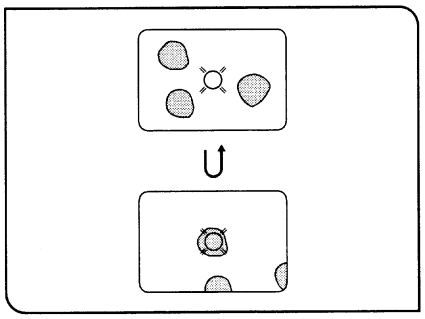


Fig. 27

« Application Examples »

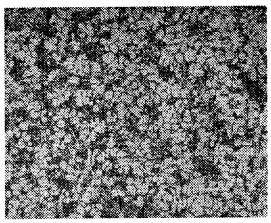
- When you want to take photomicrographs of a single specimen by varying the framing or assemble panoramic photomicrographs from a number of exposures, select framing with average specimen distribution and lock the expected automatic exposure time there.
- When the specimen with which spot metering is required cannot be located at the image center due to framing considerations, move the specimen at the center, lock the expected exposure time at the center, then reframe the specimen and execute the exposure. (Fig. 27)

5 Setting the Spot/Average Metering Area (Fig. 28)

NOTE **The spot/average metering mode selection is not accepted in the manual exposure mode. When the GX51 microscope is used, correct spot metering may be impossible due to an error in the metering area, even when the spot metering mode is set with the following steps.**

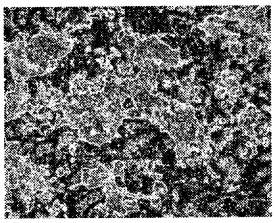
◎Select the spot or average metering mode that is appropriate for the specimen distribution condition.

(Examples)

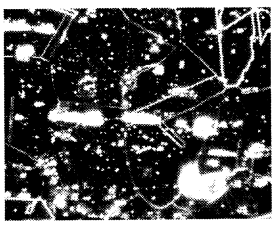


Brightfield average metering

Brightfield spot metering



Darkfield average metering



Darkfield spot metering

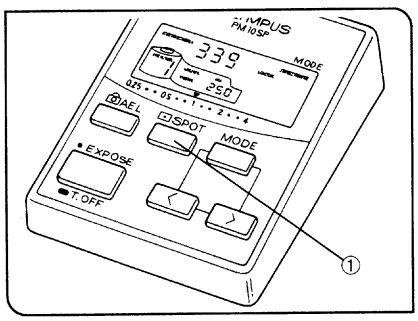


Fig. 28

1. Pressing the SPOT key ① in the average metering mode sets the spot metering mode and displays the spot metering marking "⊡" in the LCD panel.
2. When the SPOT key ① is pressed in the spot metering mode, the average metering mode is set and the spot metering marking "⊡" disappears from the LCD panel.

◎Metering capabilities in automatic exposure mode

The metering capabilities of the spot and metering modes are identical.

The minimum exposure time is 1/125 second; however, the maximum exposure time varies according to the film reciprocity and film speed.

★**The table below shows the capabilities when the exposure adjustment value is 1.0.**

Camera Back Used	Typical Film Speed (ISO)	Film Reciprocity		
		2	4	6
35 mm	3	8 hr. 00 min.	–	–
	100	8 min. 25 sec.	21 min. 12 sec.	53 min. 25 sec.
	400	1 min. 40 sec.	3 min. 30 sec.	7 min. 00 sec.
	800	45.7 sec.	1 min. 25 sec.	2 min. 35 sec.
	3200	9.2 sec.	13.6 sec.	20.1 sec.
	25600	0.8 sec.	0.9 sec.	1.0 sec.
Large format	3	–	–	–
	100	1 hr. 02 min.	–	–
	400	18 min. 40 sec.	52 min. 30 sec.	2 hr. 27 min.
	800	8 min. 23 sec.	21 min. 12 sec.	53 min. 22 sec.
	3200	1 min. 42 sec.	3 min. 27 sec.	7 min. 00 sec.
	25600	9.2 sec.	13.6 sec.	20.1 sec.

★**If it becomes necessary to employ exposure time that exceeds the automatic exposure metering capability, use the manual exposure mode.**

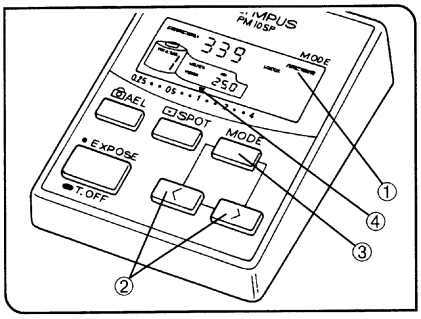


Fig. 29

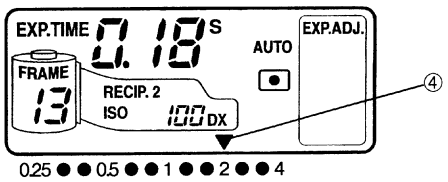
6 Setting the Exposure Adjustment (EXP. ADJ.) (Fig. 29)

◎Exposure can be adjusted for a wide range of specimen contrast patterns, for example when only small portions of a specimen exhibit intense brightness under darkfield or fluorescence illumination or when the background lacks contrast in brightfield illumination.

1. Make sure that the MODE display ① shows [EXP. ADJ.], and press the [‹] or [›] UP/DOWN key ② repeatedly until the desired exposure adjustment value is obtained.

★If [EXP. ADJ.] is not displayed, press the [MODE] key ③ repeatedly until it is displayed.

2. The exposure adjustment value refers to the value outside the LCD panel that is pointed by the exposure adjustment value indicator ④ moving inside the LCD panel.



Display example when exposure adjustment value is 2

■ Exposure Adjustment with an ISO 100 Film

Specimen Distribution	ESP. ADJ. Value	Effective ISO Film Speed	Exposure Variation
Spotty, dark specimen in brightfield	0.25	25	2 steps over
Scattered specimen in brightfield	0.5	50	1 step over
Specimen evenly distributed over the entire field	1	100	Normal
Scattered specimen in darkfield	2	200	1 step under
Spotty specimen in darkfield	4	400	2 steps under

★The exposure can be adjusted in increments of 1/3 steps. If the adjustment using the UP/DOWN keys ② is not enough, the exposure can also be adjusted by varying the film speed (ISO) setting.

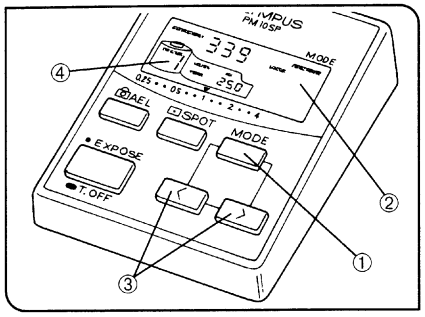


Fig. 30

7 Setting the Multiple Exposure Photography (M. EXP.) (Fig. 30)

◎The multiple exposure setting described below is required with a 35 mm camera back. With large format camera backs, multiple exposure photography is always possible provided that the light shielding plate is set in place.

1. Press the MODE key ① repeatedly until the MODE display ② shows M. EXP.
2. Press the › UP/DOWN key ③ once to set the multiple exposure mode. The multiple exposure marking " ▣ " appears in the LCD panel.
3. In the current condition, the 35 mm film will not be advanced so multiple exposures can be applied to a single frame as many times as required.

◎In order to avoid overexposure during multiple exposure photography, reduce the time per exposure by setting a higher film speed.

4. To cancel the multiple exposure mode after using the control box in another mode, display M. EXP. again and press the ‹ UP/DOWN key ③ once. The multiple exposure marking disappears, the film advances by 1 frame and the multiple exposure mode is released.

◎If the multiple exposure setting is canceled without performing exposure, the film will not advance.

8 Resetting the Film Count (F. RESET) (Fig. 30)

◎The film count reset operation described below is not available with a 35 mm camera back because its film count is set automatically according to the frame count signal from the camera back.

With a large format camera back, the displayed frame count is recalled from the memory of the last film count. This count can be changed to 1 or an any number (up to 99).

1. Press the MODE key ① repeatedly until the MODE display ② shows F. RESET.
2. Press the › UP/DOWN key ③ repeatedly until the desired film count is displayed in display area ④.

★Simply pressing the ‹ key once resets the film count to "1".

3. Press the MODE key ① to return to the previous status.

◎To enable exposure adjustment by the automatic exposure, it is recommended to set so that the MODE display shows EXP. ADJ.

7 TROUBLESHOOTING GUIDE

Under certain conditions, performance of this system may be adversely affected by factors other than defects. If a problem occurs, please review the following list and take remedial action as needed. If you cannot solve the problem after checking the entire list, please contact your local Olympus representative for assistance.

Problem	Cause	Remedy
1. During preparation		
a) Characters are not displayed in the LCD after the main switch is set to " I " (ON).	Improper cord connection.	Connect the cords correctly.
	Cord is disconnected or damaged.	Contact your local Olympus representative to obtain a new cord.
b) Estimated exposure time is not displayed immediately.	With extremely dark fields, it may take 2 or 3 seconds for the estimated exposure time to appear.	This is not a malfunction. In any case, regardless of the field brightness, it always takes 2 or 3 seconds for the first calculation of the estimated exposure time after removal and reattaching of camera back.
c) ISO film speed for a 35 mm film is not displayed when ISO of 10 and EXP. ADJ. of 0.25 are set with the UP/DOWN key.	The film speed resulting from these settings is outside the permissible range, which is defined as "ISO speed x EXP. ADJ.". It is ISO 3 to 25600 with a 35 mm camera back and ISO 25 to 25600 with a large format camera back.	Use settings that can result in an ISO speed within the permissible range, or use the manual exposure mode.
d) Exposure time is displayed even though the field is dark.	Stray light leaking in from somewhere, for example through the eyepiece or side port, may be detected.	With long exposures, darken the room or use a stray light prevention cover.
	High humidity is affecting the photometering circuit.	The photomicrographic results are usually not affected. The indication will return to normal when the humidity drops (to below 85%). However, if the exposure time is displayed with a film speed setting of ISO400, there is a problem with the equipment; have it checked by your local Olympus representative.
e) String-like imprints appear over the film perforation.	This derives from the structure of the camera back.	This does not affect the actual image.
2. During operation		
a) Remaining exposure time is not decremented.	Exposure time does not decrement when it is set to 0.5 sec. or less.	This is not a malfunction.

Problem	Cause	Remedy
b) The buzzer beeps.	Because of underexposure, the exposure alarm LED lights in red and the buzzer beeps continuously for 5 sec.	The specimen is too dark. If brightness cannot be increased, select the manual exposure mode.
	Because of overexposure, the exposure alarm LED blinks in red and the buzzer beeps intermittently for 5 sec.	The specimen is too bright. If brightness cannot be reduced, use an ND filter or lower the intensity voltage.
	Exposure is not adjusted properly.	For specimens that fill 1/2 of the 1% area, set EXP. ADJ. to 2. For those that fill 1/4 of the 1% area, set EXP. ADJ. to 4. For smaller specimens which need further adjustment, raise the ISO speed setting instead.
	Underexposure occurred because the specimen is too dark.	Use a faster film.
c) The EXPOSE key is not accepted.	This occurs when the end of film is reached when using the PM-C35DX; set a new film.	The PM-C35DX is a fully automated camera back and this function is provided to prevent accidental operation mistake (it is not a malfunction). Correct by loading a new film.
d) Film speed is not set automatically.	The film in use is not a DX film.	Use a DX film or set the ISO speed manually.
	The DX code section of the DX film or the contacts on the camera back are dirty.	Clean the dirty section. (Set the power switch to " **O** " (OFF) before cleaning the camera back contacts.)
e) Some keys or switches are locked out when pressed.	Inputs from some keys and switches are not accepted depending on the specific conditions set.	Check the current setting condition.
f) All keys and switches on the control box are locked out after the 35 mm camera back has been attached.	Unnecessary removal and attaching of the camera back resulted in erroneous communication between the camera back and control box.	Remove the camera back and attach it again. If this does not correct the problem, set the power switch to " **O** " (OFF) then " **I** " (ON) again.
g) Keys and switches are locked out for a few seconds after the PM-C35DX is attached.	Inputs from all keys switches are not accepted for about 4 seconds after the PM-C35DX is attached due to the properties of communications between the PM-C35DX and control box.	Wait for the automatic exposure indicator to light. If the indicator does not light in 4 seconds, the cause may be as explained in f) above.

Problem	Cause	Remedy
h) The imprinted data is too bright or dark.	Incorrect adjustment of the imprint data intensity.	Adjust it correctly.
	Incorrect film speed setting.	Adjust correctly.
	The set film speed is erroneous due to an error in the film speed (DX code) readout. (The LCD panel shows "DX" when the reading is correct.)	Set the main switch properly as described in item 6 on page 36.
i) Data cannot be imprinted.	The data imprint unit is not turned on.	Set the main switch properly as described in item 6 on page 36.
	The X-contact cable is not connected.	Connect the GX-PHU and data imprint unit (PM-DI35 or PM-CP-DI) with an X-contact cable.
3. Results		
a) Image is not sharp.	Dirty lens components.	Clean them.
	Poor focusing.	Adjust the focus so that both the double cross lines and specimen image are clearly visible.
	Incorrect adjustment of the aperture iris diaphragm.	Adjust it correctly.
b) Poor contrast or insufficient resolution.	In B/W photomicrography, an improper contrast filter is being used.	Select a proper filter.
	Incorrect adjustment of the aperture iris diaphragm.	Open it properly.
	Incorrect adjustment of the field iris diaphragm.	Open it properly.
	Specimen itself lacks contrast.	Stop down aperture iris diaphragm.
c) Poor color reproduction.	The microscope voltage is not set to the " 📷 " marking position or to the specified voltage.	Set it correctly.
	Contrast filter for B/W film is used with a color film.	Do not use the filter.
	Incorrect setting of RECIP.	Set it correctly.
d) Under- or overexposure.	Incorrect EXP. ADJ. setting that does not match the specimen distribution.	Set properly according to the specimen distribution.
	Incorrect RECIP. setting.	Set properly.
	Incorrect EXP. ADJ. setting.	Set properly.

Problem	Cause	Remedy
e) Film is not exposed.	With a large format camera back, the light shielding plate has not been pulled out.	Be sure to pull out the light shielding plate.
f) Only the central portion of film is exposed.	Photo eyepiece is not used.	Attach a photo eyepiece.
g) Exposed frames overlap.	Too much of the tip of the film leader section was inserted into the take-up spool when loading the film.	Read the instructions on the film loading again.
h) Overexposure occurs during fluorescence photomicrography.	RECIP. is not set.	Set it properly.
	ISO speed is input without correction.	With fluorescence photomicrography, set an ISO speed of about 4 times the rated speed.

8 SPECIFICATIONS

<table>
<tr><th colspan="2">Item</th><th>Specifications</th></tr>
<tr><td colspan="2">Exposure modes</td><td>AUTO, MANUAL, TIME, AEL (AE Lock)</td></tr>
<tr><td colspan="2">Light detection element</td><td>1%/30% split, concentric SPD (Silicon Photo Diode)</td></tr>
<tr><td rowspan="3">Automatic exposure</td><td>Metering area</td><td>2 modes (Electrical selection using a control box key)
Spot metering: 1% area of 35 film plane
Average metering: 30% area of 35 mm film plane</td></tr>
<tr><td>Metering method</td><td>Memory-based metering (Automatic light path selection by mirror flapping)</td></tr>
<tr><td>Automatic exposure range</td><td>1/125 sec. to 21 min. 12 sec.
(35 mm camera back, ISO 100, EXP. ADJ. 1, RECIP. 4)</td></tr>
<tr><td colspan="2">Light distribution</td><td><table><tr><td>Operation</td><td>Camera</td><td>Metering</td></tr><tr><td>Metering</td><td>0%</td><td>100%</td></tr><tr><td>Exposure</td><td>100%</td><td>0%</td></tr></table></td></tr>
<tr><td rowspan="2">ISO speed setting</td><td>Setting range</td><td>35 mm: 3 to 25600, in 1/3 steps
Large format: 25 to 25600, in 1/3 steps</td></tr>
<tr><td>Setting method</td><td>Automatic setting based on DX code (35 mm only).
Manual setting using the UP/DOWN switches.</td></tr>
<tr><td colspan="2">Exposure adjustment (EXP. ADJ.)</td><td>0.25 to 4 (in 1/3 steps)</td></tr>
<tr><td colspan="2">Film reciprocity (RECIP.)</td><td>3 steps, including 2, 4 and 6.</td></tr>
<tr><td colspan="2">AE lock (AEL)</td><td>Locks the estimated exposure time.
Locks the actual exposure time while it is displayed (within 2 sec. after each exposure).</td></tr>
<tr><td colspan="2">Manual time setting</td><td>0.01 sec. to 40 min. Time exposure also available.</td></tr>
<tr><td rowspan="3">Exposure indication</td><td>Display unit</td><td>M (min.) and S (sec.) with both AUTO and MANUAL exposure. (Decimal, 3 significant digits)</td></tr>
<tr><td>Display method</td><td>AUTO exposure mode
(i) Before exposure: Estimated exposure time (calculated in max. 0.7 sec.)
(ii) During exposure: Remaining exposure time
(iii) After exposure: Actual exposure time (displayed for 2 sec.)</td></tr>
<tr><td>Display method</td><td>MANUAL exposure mode
(i) Before exposure: Set exposure time (0.01 S - 40 M)
(ii) During exposure: Remaining exposure time
(iii) After exposure: Actual exposure time (displayed for 2 sec.)
TIME exposure mode
(i) Before exposure: "0.00 S" set by manual setting.
(ii) During exposure: Elapsed exposure time after the EXPOSE key is pressed.
(iii) After exposure: Actual exposure time displayed after the EXPOSE (T.OFF) key is pressed (displayed for 2 sec.).</td></tr>
<tr><td></td><td>Exposure alarm</td><td>Overexposure:
Blinking of red LED. "000S" displayed in the EXP. TIME area of the LCD panel. Intermittent buzzer beeps for 5 times. Exposure not accepted.
Underexposure:
Continuous lighting of red LED. "999H" displayed in the EXP. TIME area of the LCD panel. Continuous buzzer beep for 5 seconds. Exposure not accepted.</td></tr>
</table>

Item	Specifications
Data backup	The following data is backed up after the main switch is set to "O" (OFF): • Film count in a large format camera back • ISO speed* • EXP. ADJ. value • RECIP. value • Spot/Average metering mode • BRIGHT. (LCD panel brightness) The following modes cannot be recalled once the main switch is set to "O" (OFF): • The initial mode is always EXP. ADJ. • The AEL and M.EXP. modes are not backed up after power off. * The ISO speed of 35 mm film is backed up only when the last setting is based on other method than the DX code detection.
Operating environment	• Indoor use. • Altitude: Max. 2000 meters. • Ambient temperature: 5 to 40°C (41 to 104°F) • Maximum relative humidity: 80% for temperatures up to 31°C (88°F), decreasing linearly through 70% (at 34°C), 60% (at 37°C) to 50% (at 40°C). • Supply voltage fluctuation: ±10%. • Pollution degree: 2 (in accordance with IEC60664). • Installation (overvoltage) category: II (in accordance with IEC60664)/
Rated input	Control box: 15 V ±0.15 V DC, 1.33 A AC adapter: 100-120 V/220-240 V, ∿ 1.0 A/0.5 A
Dimensions & weight (excluding the protrusion dimensions)	Photo Unit GX-PHU: 156(W) x 100(D) x 250(H) mm, 5.1 kilograms Photographing lens: 36(dia.) x 24.5 mm, 100 grams Control box: 84(W) x 108(D) x 32(H) mm, 280 grams

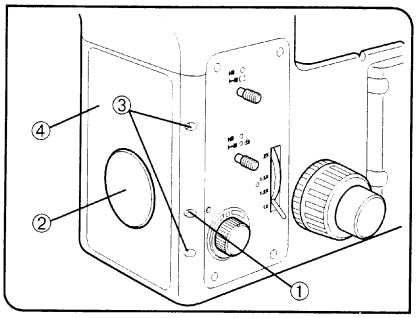


Fig. 31

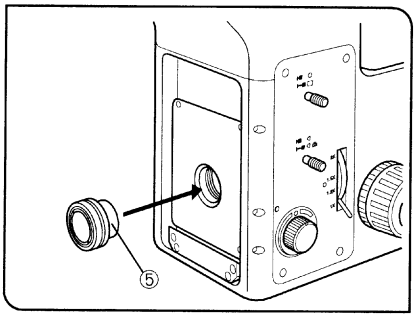


Fig. 32

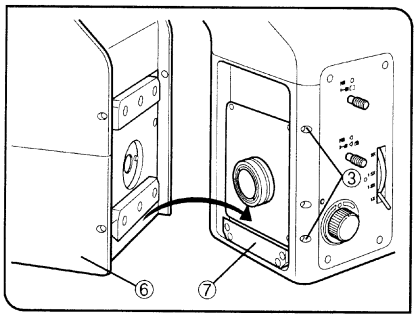


Fig. 33

1 Installing the GX-PHU Photo Unit (Figs. 31-33)

1. Fully loosen the TV adapter clamping screw ① using the Allen wrench provided with the microscope frame, then remove the cap ②.
2. Loosen the 2 PHU clamping screws ③ with the Allen wrench and remove the cover ④.
3. Screw in the photographing lens ⑤ firmly.

★Be sure to use the photographing lens provided with your GX-PHU. (Otherwise, the confocality between them cannot be obtained.)

4. Engage the bottom of the GX-PHU ⑥ with the mount dovetail ⑦ on the microscope frame, and push the GX-PHU gently toward the microscope frame.
5. Tighten the 2 PHU clamping screws ③ firmly.

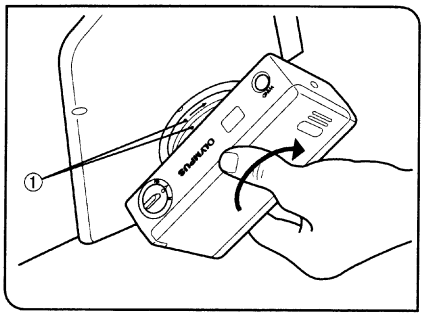


Fig. 34

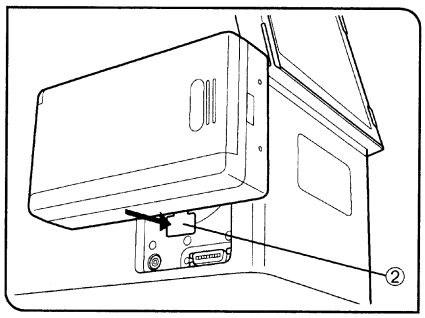


Fig. 35

2 Attaching the PM-C35DX Automatic 35 mm Camera Back (Figs. 34 & 35)

★ **Remove the dustproof cap from the 35 mm camera back mount before proceeding to the following.**

1. Align the positioning indices ① on the camera back mount and camera back, then turn the camera back in the clockwise direction as indicated by the arrow while pressing it lightly toward the camera back mount. The locking pin automatically locks the camera back in place (Fig. 34)
2. Once attached, the camera back's light shielding plate opens automatically.

Removing the Camera Back

While pressing the release lever ② on the rear end of the camera back mount, turn the camera back in the counterclockwise direction until the positioning indices are aligned, then remove the camera back. (Fig. 35)

The light shielding plate closes before the camera back is removed so that the film in it will not be exposed to light.

★ **The camera back should not be attached and detached repeatedly with the power on, as malfunction may result.**

★ **While the 35 mm camera back is detached from the photo unit, be sure to attach the dustproof cap in order to prevent penetration of dust and dirt.**

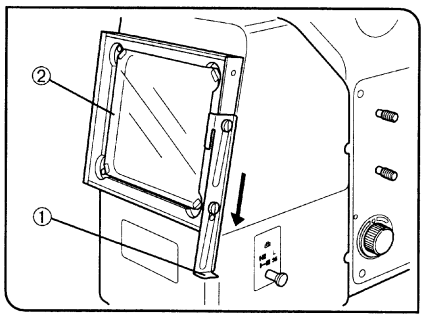


Fig. 36

3 Attaching the Large Frame Camera Back (Fig. 36)

◎ Any of the PM-CP-3/PM-CP-DI/PM-CFI-4 large frame camera back, the PM-C4X5-D intermediate adapter for 4 x 5 film holders and the PM-CUP universal large format frame can be attached in the same manner as described in the following steps.

1. Lower the clamping lever ① fully downward and remove the dustproof cover.
2. While fitting the left edge of the large format camera back into the mounting groove ②, push the large format camera back against the photo unit to bring them in close contact, then raise the clamping lever ① upward.

★ **When the large frame camera back is removed, be sure to attach the dustproof cover.**

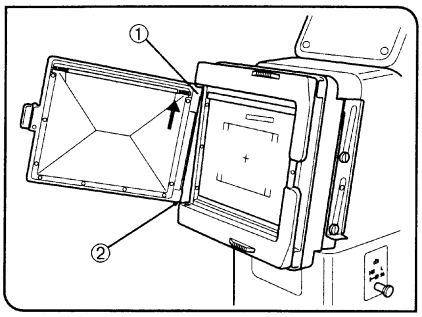


Fig. 37

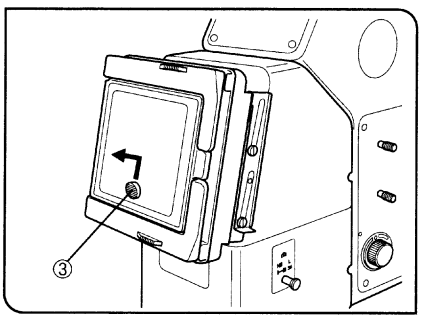


Fig. 38

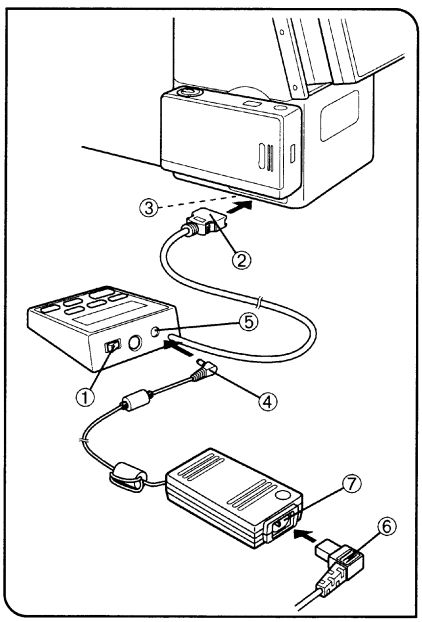


Fig. 39

4 Attaching the Focusing Hood PM-FD (Figs. 37 & 38)

1. Hold the focusing hood perpendicularly to the focusing glass, fit the upper mount pin ①, push the focusing hood upward, then align the lower mount pin ② and move the focusing hood downward again.
2. Fit the focusing hood into the large format frame and make sure that it clicks to indicate locking.
3. To open the focusing hood, push the food open/close button ③ up with your finger then loosen the pressure of your finger. (Fig. 38)

5 Connecting the Cables and Cords (Fig. 39)

⚠ Cables and cords are vulnerable when bent or twisted. Never subject them to excessive force.

⚠ Make sure that the main switch ① of the control box is set to "O" (OFF) before connecting cables.

⚠ Always use the AC power adapter and power cord provided by Olympus. If no power cord is provided, please select the proper power cord by referring to the section "PROPER SELECTION OF THE POWER SUPPLY CORD" at the end of this instruction manual.

1. Plug the signal cable connector ② from the rear of the control box into the connector ③ on the rear of the photographic unit.
2. Plug the power output plug ④ from the AC adapter into the DC input receptacle ⑤ on the control box.
3. Plug the connector ⑥ of the power cord into the power cord receptacle ⑦ on the AC adapter.

⚠ Connect the power cord correctly and ensure that the grounding terminal of the power cord plug and that of the wall outlet are properly connected. If the equipment is not grounded, Olympus can no longer warrant the electrical safety and performance of the equipment.

4. Insert the power cord plug into a wall outlet.

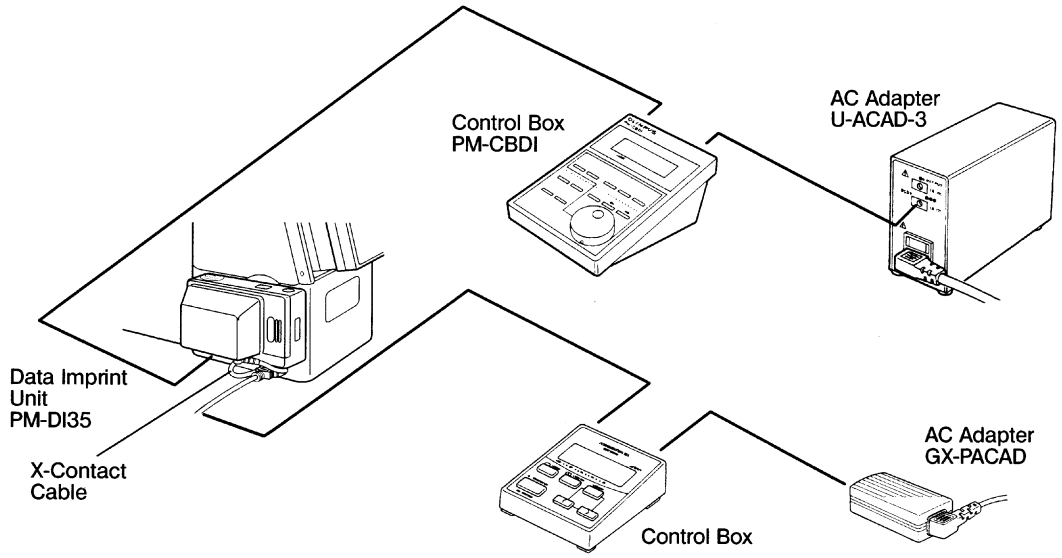
6 Caution for Use of the PM-DI35 Data Imprint Unit

★ **When the PM-DI35 data imprint unit is attached to the GX-PHU photo unit, be sure to turning them on in the following sequence so that the GX-PHU can manifest its full performance.**

1. Set the camera back light path selector knob of the GX-PHU to the 35 mm camera back.
2. Set the main switch on the U-ACAD-3 5 V AC adapter for the PM-CBDI control box of the PM-DI35 to " I " (ON).
3. Wait for 5 seconds or more,, then set the main switch on the control box for the GX-PHU to " I " (ON).

★ **If the PM-DI35 is turned on without switching the camera's light path to the 35 mm side, data will not be recorded in synchronism with exposure (because the X-contact signal will not be output).**

★ **If the main switch on the U-ACAD-3 is switched ON/OFF while the GX-PHU is ON, the DX code information on the film speed may not be set properly in the PM-CBDI.**



■ PROPER SELECTION OF THE POWER SUPPLY CORD

If no power supply cord is provided, please select the proper power supply cord for the equipment by referring to " Specifications " and " Certified Cord " below:

CAUTION: In case you use a non-approved power supply cord for Olympus products, Olympus can no longer warrant the electrical safety of the equipment.

Specifications

Voltage Rating	125V AC (for 100-120V AC area) or, 250V AC (for 220-240V AC area)
Current Rating	6A minimum
Temperature Rating	60°C minimum
Length	3.05 m maximum
Fittings Configuration	Grounding type attachment plug cap. Opposite terminates in molded-on IEC configuration appliance coupling.

Table 1 Certified Cord

A power supply cord should be certified by one of the agencies listed in Table 1 , or comprised of cordage marked with an agency marking per Table 1 or marked per Table 2. The fittings are to be marked with at least one of agencies listed in Table 1. In case you are unable to buy locally in your country the power supply cord which is approved by one of the agencies mentioned in Table 1, please use replacements approved by any other equivalent and authorized agencies in your country.

Country	Agency	Certification Mark	Country	Agency	Certification Mark
Argentina	IRAM		Italy	IMQ	
Australia	SAA		Japan	MITI	
Austria	ÖVE		Netherlands	KEMA	
Belgium	CEBEC		Norway	NEMKO	
Canada	CSA		Spain	AEE	
Denmark	DEMKO		Sweden	SEMKO	
Finland	FEI		Switzerland	SEV	
France	UTE		United Kingdom	ASTA BSI	
Germany	VDE		U.S.A.	UL	
Ireland	NSAI				

Table 2 HAR Flexible Cord

APPROVAL ORGANIZATIONS AND CORDAGE HARMONIZATION MARKING METHODS

Approval Organization	Printed or Embossed Harmonization Marking (May be located on jacket or insulation of internal wiring)		Alternative Marking Utilizing Black-Red-Yellow Thread (Length of color section in mm)		
			Black	Red	Yellow
Comite Electrotechnique Belge (CEBEC)	CEBEC	‹HAR›	10	30	10
Verband Deutscher Elektrotechniker (VDE) e.V. Prüfstelle	‹VDE›	‹HAR›	30	10	10
Union Technique de l'Electricite´ (UTE)	USE	‹HAR›	30	10	30
Instituto Italiano del Marchio di Qualita´ (IMQ)	IEMMEQU	‹HAR›	10	30	50
British Approvals Service for Electric Cables (BASEC)	BASEC	‹HAR›	10	10	30
N.V. KEMA	KEMA-KEUR	‹HAR›	10	30	30
SEMKO AB Svenska Elektriska Materielkontrollanstalter	SEMKO	‹HAR›	10	10	50
Österreichischer Verband für Elektrotechnik (ÖVE)	‹ÖVE›	‹HAR›	30	10	50
Danmarks Elektriske Materialkontroll (DEMKO)	‹DEMKO›	‹HAR›	30	10	30
National Standards Authority of Ireland (NSAI)	‹NSAI›	‹HAR›	30	30	50
Norges Elektriske Materiellkontroll (NEMKO)	NEMKO	‹HAR›	10	10	70
Asociacion Electrotecnica Y Electronica Espanola (AEE)	‹UNED›	‹HAR›	30	10	70
Hellenic Organization for Standardization (ELOT)	ELOT	‹HAR›	30	30	70
Instituto Portages da Qualidade (IPQ)	np	‹HAR›	10	10	90
Schweizerischer Elektro Technischer Verein (SEV)	SEV	‹HAR›	10	30	90
Elektriska Inspektoratet	SETI	‹HAR›	10	30	90

Underwriters Laboratories Inc. (UL)	SV, SVT, SJ or SJT, 3 X 18AWG
Canadian Standards Association (CSA)	SV, SVT, SJ or SJT, 3 X 18AWG

This device complies with the requirements of both directive 89/336/EEC concerning electromagnetic compatibility and directive 73/23/EEC concerning low voltage. The CE marking indicates compliance with the above directives.

MEMO

OLYMPUS®

OLYMPUS OPTICAL CO.,LTD.
2-43-2,Hatagaya, Shibuya-ku, Tokyo, Japan
OLYMPUS OPTICAL CO.(EUROPA) GMBH.
Postfach 10 49 08, 20034, Hamburg, Germany
OLYMPUS AMERICA INC.
2 Corporate Center Drive, Melville, NY 11747-3157, U.S.A.
OLYMPUS SINGAPORE PTE LTD.
491B River Valley Road, #12-01/04 Valley Point Office Tower, Singapore 248373
OLYMPUS OPTICAL CO.(U.K.) LTD.
2-8 Honduras Street, London EC1Y OTX, United Kingdom.
OLYMPUS AUSTRALIA PTY. LTD.
104 Ferntree Gully Road, Oakleigh, Victoria, 3166, Australia

This publication is printed on recycled paper.
Printed in Japan 2001 06 M 002–①

RECIP.（フィルム特性）DATA

GX-PHU

★GX-PHUでは、設定値が2、4、6のみです。従ってRECIP.値1、3、5、7は次の値に設定してください。(1と3→2、5→4、7→6)

※撮影結果の好みに応じて、設定値は修正されても結構です。

★The GX-PHU's selectable film reciprocity values are only 2, 4 and 6. When the RECIP. value is 1, 3, 5 or 7, select as follows: 1 or 3 → 2; 5 → 4; 7 → 6.

※Film reciprocity values can also be modified according to your preference.

Film Maker	Film Name	ISO	Recip	Type	Color
3M	Color Print HR100	100	3		Color
3M	Color Slide 1000	1000	3		Color
3M	Color Slide 640-T	640	2		Color
Agfa	Agfa Pan APX100	100	4	Nega.	Monochrome
Agfa	Agfa Pan APX25	25	4	Nega.	Monochrome
Agfa	Agfa Pan APX400	400	7	Nega.	Monochrome
Agfa	Agfa SCALA200	200	5	Reversal	Monochrome
Agfa	Agfachrome RSX100	100	3	Reversal	Color
Agfa	Agfachrome RSX200	200	6	Reversal	Color
Agfa	Agfachrome RSX50	50	2	Reversal	Color
Agfa	Agfacolor HDC100	100	3	Nega.	Color
Agfa	Agfacolor HDC200	200	3	Nega.	Color
Agfa	Agfacolor HDC400	400	3	Nega.	Color
Agfa	Agfacolor Optima100	100	4	Nega.	Color
Agfa	Agfacolor Ultra50	50	2	Nega.	Color
Fuji Film	Fujichrome 64T	64	2	Reversal	Color
Fuji Film	Fujichrome Astia100	100	2	Reversal	Color
Fuji Film	Fujichrome DigitalOutput	100	2	Reversal	Color
Fuji Film	Fujichrome MS100/1000 Pro	100	1	Reversal	Color
Fuji Film	Fujichrome Provia100	100	1	Reversal	Color
Fuji Film	Fujichrome Provia1600	1600	3	Reversal	Color
Fuji Film	Fujichrome Provia400	400	2	Reversal	Color
Fuji Film	Fujichrome Sensia200	200	2	Reversal	Color
Fuji Film	Fujichrome Sensia400	400	2	Reversal	Color
Fuji Film	Fujichrome Sensia Ⅱ 100	100	3	Reversal	Color
Fuji Film	Fujichrome Velvia	50	2	Reversal	Color
Fuji Film	Fujicolor 160NS	160	2	Nega.	Color
Fuji Film	Fujicolor Reala	100	2	Nega.	Color
Fuji Film	Fujicolor Reala 100ACE	100	1	Nega.	Color
Fuji Film	Fujicolor Super 100	100	1	Nega.	Color
Fuji Film	Fujicolor Super 400	400	2	Nega.	Color
Fuji Film	Fujicolor Super G100	100	1	Nega.	Color
Fuji Film	Fujicolor Super G100ACE	100	2	Nega.	Color
Fuji Film	Fujicolor Super G200	200	2	Nega.	Color
Fuji Film	Fujicolor Super G400	400	2	Nega.	Color
Fuji Film	Fujicolor Super G400ACE	400	2	Nega.	Color
Fuji Film	Fujicolor Super G800ACE	800	3	Nega.	Color
Fuji Film	Fujicolor Super HG1600	1600	4	Nega.	Color
Fuji Film	Fujicolor Super V100	100	1	Nega.	Color
Fuji Film	FujiInstant FI-10	160	7	Instant Auto	Color
Fuji Film	FujiInstant FI-800	800	7	Instant Auto	Color
Fuji Film	FujiInstant FP-100B Super	100	2	Instant	Monochrome
Fuji Film	FujiInstant FP-100C	100	7	Instant	Color
Fuji Film	FujiInstant FP-3000B Super	3200	6	Instant	Monochrome
Fuji Film	FujiInstant FP-400B Super	400	6	Instant	Monochrome
Fuji Film	FujiInstant FP-500B Super	500	7	Instant	Monochrome
Fuji Film	Minicopy HR-2	40	1	Nega.	Monochrome
Fuji Film	Neopan 1600Super Presto	1600	7	Nega.	Monochrome
Fuji Film	Neopan F	32	2	Nega.	Monochrome
Fuji Film	Neopan Presto100	100	4	Nega.	Monochrome
Fuji Film	Neopan Presto400	400	6	Nega.	Monochrome
Fuji Film	Neopan SS	100	1	Nega.	Monochrome
Ilford	Ilford 100Delta	100	3	Nega.	Monochrome
Ilford	Ilford 400Delta	400	7	Nega.	Monochrome
Ilford	Ilford FP4Plus	125	2	Nega.	Monochrome
Ilford	Ilford HP5Plus	400	7	Nega.	Monochrome
Ilford	Ilford PanFPlus	50	4	Nega.	Monochrome
Ilford	Ilford XP2 400	400	4	Nega.	Monochrome
Kodak	Ektachrome 100Plus Pro	100	5	Reversal	Color
Kodak	Ektachrome 100Pro	100	4	Reversal	Color
Kodak	Ektachrome 100X Pro	100	5	Reversal	Color
Kodak	Ektachrome 160T	160	4	Reversal	Color

Film Maker	Film Name	ISO	Recip	Type	Color
Kodak	Ektachrome 160T Pro	160	4	Reversal	Color
Kodak	Ektachrome 200Pro	200	5	Reversal	Color
Kodak	Ektachrome 320T Pro	320	5	Reversal	Color
Kodak	Ektachrome 400X Pro	400	6	Reversal	Color
Kodak	Ektachrome 64Pro	64	5	Reversal	Color
Kodak	Ektachrome 64T Pro	64	1	Reversal	Color
Kodak	Ektachrome 64X Pro	64	6	Reversal	Color
Kodak	Ektachrome Dyna 50EX	50	1	Reversal	Color
Kodak	Ektachrome Dyna 100EX	100	1	Reversal	Color
Kodak	Ektachrome Dyna 200EX	200	4	Reversal	Color
Kodak	Ektachrome Dyna 400EX	400	4	Reversal	Color
Kodak	Ektachrome E100S	100	1	Reversal	Color
Kodak	Ektachrome E100SW	100	1	Reversal	Color
Kodak	Ektachrome E200	200	1	Reversal	Color
Kodak	Ektachrome Electronic Output	100	4	Reversal	Color
Kodak	Ektachrome P1600Pro	1600	5	Reversal	Color
Kodak	Ektachrome Panther 100Pro	100	2	Reversal	Color
Kodak	Ektachrome Panther 100X Pro	100	3	Reversal	Color
Kodak	Ektar 100	100	1	Nega.	Color
Kodak	Ektar 25	25	1	Nega.	Color
Kodak	Ektar 25Pro	25	1	Nega.	Color
Kodak	Gold 100	100	1	Nega.	Color
Kodak	Gold 1600	1600	4	Nega.	Color
Kodak	Gold 200	200	1	Nega.	Color
Kodak	Gold 400	400	3	Nega.	Color
Kodak	Gold 800	800	4	Nega.	Color
Kodak	Kodachrome 200	200	4	Reversal	Color
Kodak	Kodachrome 200Pro	200	5	Reversal	Color
Kodak	Kodachrome 25	25	4	Reversal	Color
Kodak	Kodachrome 25Pro	25	4	Reversal	Color
Kodak	Kodachrome 40T	40	4	Nega.	Color
Kodak	Kodachrome 64	64	4	Reversal	Color
Kodak	Kodachrome 64Pro	64	4	Reversal	Color
Kodak	Plus-X Pan	125	2	Nega.	Monochrome
Kodak	Royal Gold	25	1	Nega.	Color
Kodak	Royal Gold	100	2	Nega.	Color
Kodak	Royal Gold	400	2	Nega.	Color
Kodak	Super Gold 100	100	1	Nega.	Color
Kodak	Super Gold 200	200	1	Nega.	Color
Kodak	Super Gold 400	400	1	Nega.	Color
Kodak	T-Max 100Pro	100	5	Nega.	Monochrome

Film Maker	Film Name	ISO	Recip	Type	Color
Kodak	T-Max 400Pro	400	6	Nega.	Monochrome
Kodak	T-Max P3200Pro	3200	2	Nega.	Monochrome
Kodak	Technical Pan	100	1	Nega.	Monochrome
Kodak	Tri-X Pan	400	3	Nega.	Monochrome
Kodak	Vericolor 100HC	100	2	Nega.	Color
Kodak	Vericolor 400Pro	400	4	Nega.	Color
Kodak	Vericolor3 Protype S	160	4	Nega.	Color
Konica	Konica Pan 100	100	2	Nega.	Monochrome
Konica	Konica Pan 200	200	3	Nega.	Monochrome
Konica	Konica Pan 400	400	7	Nega.	Monochrome
Konica	Konicachrome R-100	100	3	Reversal	Color
Konica	Konicachrome R-1000	1000	7	Reversal	Color
Konica	Konicachrome R-200	200	7	Reversal	Color
Konica	Konicachrome R-50	50	3	Reversal	Color
Konica	Konicachrome SINRA100 HIGH	100	2	Reversal	Color
Konica	Konicacolor Impresa50 Pro	50	1	Nega.	Color
Konica	Konicacolor CENTURIA100	100	3	Nega.	Color
Konica	Konicacolor CENTURIA200	200	3	Nega.	Color
Konica	Konicacolor CENTURIA400	400	4	Nega.	Color
Konica	Konicacolor CENTURIA800	800	3	Nega.	Color
Konica	Konicacolor JX100	100	2	Nega.	Color
Konica	Konicacolor JX400	400	2	Nega.	Color
Konica	Konicacolor LV100	100	2	Nega.	Color
Konica	Konicacolor LV400	400	2	Nega.	Color
Konica	Konicacolor XG3200	3200	4	Nega.	Color
Konica	Konicacolor XG400	400	3	Nega.	Color
Polaroid	Polachrome CS35mm	40	4	35Instant	Color
Polaroid	Polachrome HCP35mm	160	7	35Instant	Color
Polaroid	Polacolor 100Pro	100	4	4x5Instant	Color
Polaroid	Polacolor 679	100	3	Instant	Color
Polaroid	Polagraph HC35mm	400	6	35Instant	Monochrome
Polaroid	Polapan CT35mm	125	5	35Instant	Monochrome
Polaroid	Type 331	400	5	Instant Auto	Monochrome
Polaroid	Type 339	640	4	Instant Auto	Color
Polaroid	Type 52	400	2	4x5Instant	Monochrome
Polaroid	Type 55	50	2	4x5Instant	Monochrome
Polaroid	Type 57,107,667	3200	5	4x5Instant	Monochrome
Polaroid	Type 59,669	80	4	4x5Instant	Color
Polaroid	Type 612	20000	5	Instant	Monochrome
Polaroid	Type 665	80	2	Instant	Monochrome
Polaroid	Type 668	80	4	Instant	Color